SAN FRANCISCO PUBLIC LIBRARY
3 1223 09165 3877

ALASTAIR REYNOLDS

DEEP NAVIGATION

Trade price $26
Slipcased price $49

DEEP NAVIGATION
BY ALASTAIR REYNOLDS

Deep Navigation is the 2010 Boskone Book by Boskone's Guest of Honor Alastair Reynolds. It contains a broad spectrum of his work, from his first published story, "Nunivak Snowflakes," through "The Receivers" and "Monkey Suit," both published within the last year, plus an introduction by his friend, and former Boskone Guest, Stephen Baxter.

It is well-known that the scope of Dr. Reynolds' stories is vast; his Revelation Space stories alone attest to that. This collection shows his impressive range, from the claustrophobic Antarctic station, "Byrd Land Six," to the brane-spanning "Tiger, Burning," to the millennia-long quest of "Fury."

His viewpoints are as varied as his constant production of big, new ideas. A lone artist calmly painting the universe. A planetary ecological struggle reduced to a game. A fleeing assassin drawn into an alien rescue between the stars.

The full-color dust jacket is by John Picacio, the Boskone 47 Official Artist.

NESFA Press
P.O. Box 809
Framingham, MA 01701
USA

www.nesfapress.com

DEEP NAVIGATION

A COLLECTION OF STORIES BY

ALASTAIR REYNOLDS

EDITED BY

Ann A. Broomhead

Post Office Box Box 809, Framingham MA, 01701

http://www.nesfa.org/press

2010

Deep Navigation
Copyright © 2010 by Alastair Reynolds

Introduction © 2010 by Stephen Baxter

Dustjacket painting © 2006, 2010 by John Picacio

Cover and interior design by Alice N. S. Lewis

All rights reserved. No part of this book may be reproduced in any form or by any electronic, magical or mechanical means including information storage and retrieval without permission in writing from the publisher, except by a reviewer, who may quote brief passages in a review.

First Edition

International Standard Book Numbers:
978-1-886778-90-0 (Trade State),
978-1-886778-91-7 (Slipcased State)

This is a limited edition of 1000 copies. The first 140 copies, of which 10 are lettered A through J and 130 are numbered 1 through 130, are the autographed and slipcased state. The remaining 860 copies are numbered 131 through 990 and constitute the trade state. No other signed or numbered editions will be printed

This Book is Number 288

3 1223 09105 3877

Copyright Acknowledgments

"Byrd Land Six" Copyright © 1995 by Alastair Reynolds. First published in *Interzone* 96, June 1995.

"Feeling Rejected" Copyright © 2005 by Alastair Reynolds. First published in *Nature*, 2005.

"The Fixation" Copyright © 2007 by Alastair Reynolds. First published in *Hannun basaarissa*, 2007; first published in English in *The Solaris Book of New Science Fiction 3*, February 2009.

"Fresco" Copyright © 2001 by Alastair Reynolds. First published *The UNESCO Courier*, May 2001.

"Fury" Copyright © 2008 by Alastair Reynolds. First published in *Eclipse 2: New Science Fiction and Fantasy*, November 2008.

"Monkey Suit" Copyright © 2009 by Alastair Reynolds. First published in *Death Ray*, 2009.

"Nunivak Snowflakes" Copyright © 1990 by Alastair Reynolds. First published in *Interzone* 36, June 1990.

"On the Oodnadatta" Copyright © 1998 by Alastair Reynolds. First published in *Interzone* 128, February 1998.

"The Receivers" Copyright © 2009 by Alastair Reynolds. First published in *Other Earths*, April 2009.

"The Sledge-Maker's Daughter" Copyright © 2007 by Alastair Reynolds. First published in *Interzone* 209, April 2007.

"Soirée" Copyright © 2008 by Alastair Reynolds. First published in *Celebration*, 2008.

"The Star Surgeon's Apprentice" Copyright © 2008 by Alastair Reynolds. First published in *The Starry Rift*, 2008.

"Stroboscopic" Copyright © 1998 by Alastair Reynolds. First published in *Interzone* 134, August 1998.

"Tiger, Burning" Copyright © 2006 by Alastair Reynolds. First published in *Forbidden Planets*, 2006.

"Viper" Copyright © 1999 by Alastair Reynolds. First published in *Asimov's Science Fiction*, December 1999.

Contents

Introduction by Stephen Baxter 7
Nunivak Snowflakes 11
Monkey Suit 35
The Fixation 49
Feeling Rejected 67
Fury 71
Stroboscopic 105
The Receivers 129
Byrd Land Six 153
The Star Surgeon's Apprentice 177
On the Oodnadatta 211
Fresco 243
Viper 247
Soirée 267
The Sledge-Maker's Daughter 281
Tiger, Burning 307

Introduction

by Stephen Baxter

Here are fifteen science fiction short stories by Alastair Reynolds. You're sure to enjoy them in their own right—but you'll also find that they provide a retrospective on Reynolds's career as a published writer, which, remarkably, already spans twenty years, and which in 2010 is about to enter a new phase.

I first met Al Reynolds, as I recall, at a party thrown by the publishers of the UK magazine *Interzone* in 1990. I had first been published by that magazine a few years earlier, and Reynolds was kind enough to say (and he's repeated it since in print, in the afterword to his 2006 collection *Galactic North*) that my work was among his influences. Along with Paul McAuley I had, in the 1980s, shown that it was possible to sell what Reynolds called 'stories with spaceships in' to *Interzone*—just the sort of thing he wanted to write himself.

At that time Reynolds was 24 and a graduate science student (studying neutron stars). He already had some experience as a writer, with two whole novels completed in his teens, though

unpublished. Now his first successful stories were in the process of appearing in print. One of them ('Dilation Sleep', 1990) would have lasting significance as the first work published in his Revelation Space future history sequence.

You'll find another of those early publications here: 'Nunivak Snowflakes' (1990). In this early story, I think, you can perceive many of the strengths of Reynolds's writing: the ability to deliver huge yet new ideas ('viral spacetime'!), the way those ideas are integrated into plotline and characterisation, the glimpses you get of a wider universe as context, and a striking depth of thinking and intensity of imagination. All these are the hallmarks of authentic hard sf. And this very early story's unusual setting shows too that Reynolds was always interested in writing more than just 'stories with spaceships in'.

From 1991 Reynolds became a research astronomer with the European Space Agency, and moved to Holland. Over the next few years his creative energies were focussed on the hugely ambitious project that would eventually become the novel *Revelation Space*, and the associated future history. But Reynolds reappeared in the pages of *Interzone* in 1995, with another piece included here: 'Byrd Land Six'. You'll find it's a return with a bang, with another astonishing high concept wedded to a breakneck page-turner plotline, and a setting and characterisation that perhaps reflect Reynolds's own new world of corporate and government science.

After 'Byrd Land Six' Reynolds's writing seemed to come into focus. In the next few years, as well as publishing short fiction in the Revelation Space sequence, he showed the growing range of his ideas and technique in other works, some of which are included here. 'On the Oodnadatta' (1998) is a subversion of a familiar sf trope with a patina of visceral horror: there has always been a striking noir streak to Reynolds's writing. 'Stroboscopic' (1998) is a fine illustration of Reynolds's maturing narrative technique, in which the discovery of a stunningly original ecosystem perturbs the ongoing conflicts of a polarised human solar system. 'Viper' (1999), meanwhile, reads like a slab from a crime novel from fifty years hence. Reynolds's

futures, though always firmly based on scientific and social extrapolations, are neither utopias or dystopias but are, like the real world, messy—full of conflict, uncertainty and moral ambiguity, with plenty of dark corners.

Everything changed for Reynolds with the publication, at last, of *Revelation Space* in 2000. After such a long gestation the novel was a torrent of ideas and energy that thrilled its readers and received immediate critical acclaim—and it launched Reynolds's career in earnest. Two pieces included here illustrate the way Reynolds's profile quickly grew beyond the confines of the genre: 'Fresco' (2001) and 'Feeling Rejected' (2005), written respectively for a UNESCO internal publication and for the esteemed science journal *Nature*. Both short-shorts, they are elegant, respectively touching and funny—and, by the way, fiendishly difficult to write.

In 2004 Reynolds left ESA to concentrate on full-time writing, and has since returned to his native Wales with his wife Josette. He has become a reliable deliverer of high-class fiction in long and short forms, including, to date, five novels in the forty-millennia-spanning Revelation Space sequence. There's one Revelation Space story here, in 'Monkey Suit' (2009). In stories like this, and 'The Star Surgeon's Apprentice' (2008), Reynolds shows he can do sublight space opera better than anybody else since Larry Niven—and, arguably, outdoes that master himself. And you'll discover that 'Monkey Suit' shares a startling common idea with 'Fury' (2008), a saga of galactic empire sketched in a few thousand words.

In other works you'll find Reynolds spreading his wings further in terms of theme and narrative strategy. 'Tiger, Burning' (2006) is a mind-blistering homage to everybody's favourite Shakespearean space opera. 'Soirée' (2008), a tale of a starship and a singularity, is a collision of sf tropes old and new. 'The Receivers' (2009) is a fine alternate-history tale of different world wars. 'The Fixation' (2007), going further with a story of realities in conflict, has a telling as delicate as the ancient mechanism at its heart. 'The Sledge-Maker's Daughter' (2007), a gritty tale of a fallen world at the heart of an incomprehensible

war, is a particular favourite of mine because it's set in a part of the north of England close to where I live.

Recently Alastair Reynolds has grown into a new role as something of a figurehead for the field as a whole. In June 2009 Reynolds made headlines around the world when he signed a remarkable deal with his British publishers for ten books to be published over the next decade—the first will appear in 2010. Much attention was focussed on the advances quoted, but what's much more significant is the evidence of his publishers' faith in the continuing quality of his work, their ongoing support for the kind of thoughtful, deep sf Reynolds writes—and, more important yet, Reynolds's own commitment to the field he has made his own.

After twenty years of publication, and ten years after *Revelation Space*, Reynolds has become a senior and respected figure in the field. Always charming, always knowledgeable, I can attest he is extremely popular among his peers, he has become a familiar figure at conventions around the world, and he has shown himself in turn more than generous to the next generation of budding writers, whether they want to write 'stories with spaceships in' or not (for example we worked together as judges on a British Science Fiction Association writing contest).

For me it has been a pleasure to know Al and his work for twenty years. I look forward to his third decade of publication—and I've no doubt that even by 2020 there will be much more to come.

Stephen Baxter
December 2009

Nunivak Snowflakes

Seaplane days had always been special for Naluvara. Even now, troubled by love and adult doubt, seaplane days were special. Like many of his people, therefore, he found himself trudging out to the frozen shoreline, scanning the white sky for the growing orange speck of the aircraft.

It was rare, though, for the plane to arrive with anything interesting, unless you counted crates of SRA school books and videotapes, refrigerated medical supplies, greased machine parts, and, of course, fish—especially fish; trout and salmon, processed and irradiated at Point Barrow until they tasted deader than fossils.

The people of Nunivak made do with the imports. They still hunted walrus and seal, but not very successfully, and fresh fish was infrequent enough to count as a luxury. If a lot was caught it was customary to make some kind of offering to the 'helping spirits,' the invisible *tunraq*. Many of the islanders still cherished such beliefs; Naluvara was one of them.

Anyway, seaplane days were exciting. The men would drag their flimsy boats into the frothy waters of the Bering Sea, then wait patiently for the seaplane to silence its two engines. The *tannik* men in the aircraft always had beards and sunglasses, their faces blanched by UV barrier cream, and they always handed small white boxes out the cockpit window, before unloading the main cargo from the side door. Naluvara was shrewd enough to detect a black market in cigarettes, which amused him richly. The tannik men themselves often smoked, yet their whole race was paranoid about picking up melanomas under the fringes of the ozone hole.

The boats were propelled by a makeshift combination of oars and loud, roughly tuned outboards. Outriggers made them almost impossible to capsize, despite being top-heavy on the return leg. Now and again a nervous passenger would come back with them, often a tannik doctor, but very occasionally a visitor from one of the other settlements, further north, further east. Today was such an occasion, which made the day doubly special. But for Naluvara its immediate significance lay elsewhere, for it was a day that the tunraq had chosen on which to communicate with him.

Earlier that morning a strange silvery fish had dropped in the snow outside his home. Past experience told him how to unlock the fish's message: taking care to avoid his mother, he scuttled indoors, first locking his bedroom door then placing the dead creature on a filched chopping board. Swift slashes of a flick knife opened its red belly. Inside was the usual mode of tunraq communication, a rolled sheet of grey paper which his gloved fingers strove to flatten on the desk. He brushed aside the messed reams of school notes; physics and biology problems that required Tania's expert advice. None of that mundane stuff mattered for the moment. When the tunraq spirits spoke, he listened.

Nibbling the end of a plastic-wrapped salami stick, he pondered the utterance. As usual it was deadeningly simple.

Avoid the Wind Farm today.

—T

And that was it: the standard laconic message, neatly typed on the slightly soggy grey paper. This had been going on years; sometimes the messages were specific, sometimes not. Today's did not unduly worry him, nor was it the first to warn him clear of the generators north of the settlement. Perhaps one of the hungry *Netsilik* dogs was prowling there, maddened by rabies. Or a million other possibilities.

The customs of the Netsilik clan would ensure that this was a memorable time to visit the island, even if the newcomer was *Innupiat*. Nunivak Island was a smouldering intermix of previously isolated northern cultures, a UN-sanctioned melting pot. Times of celebration were eagerly shared—as were times of misery. As now, when a Netsilik family mourned the death of their grandmother. For five days they retreated into a workless stasis, a customary observation which reached the other families soon enough. Dogs went hungry. Hair went uncombed. Generators that broke down went unrepaired, so that clumps of gloom were slowly absorbing the community's autumnal lights.

This afternoon her two sons would drag her body away on the back of a skin sledge. Tonight they would leave her uncovered body under the stars and satellites, but her soul would long have departed for the beautiful Netsilik afterlife. Shortly Nunivak would celebrate its twentieth anniversary, but there would be fewer fireworks than usual.

▪ ▪ ▪

So who was this newcomer? Was she fully Innupiat, like Naluvara's family, or was she mixed Caucasian? She looked a little *Chugach*, one of the Amerindians from the warm south. It was hard to tell. She certainly lacked any of Naluvara's Mongoloid genes.

She wore spanking new snow gear in sky blue and canary yellow, and gripped a grey plastic case in woollen mitts. In vain, Naluvara hunted for a red cross or some such symbol to signify her as a doctor or ecologist. He watched sullenly as her escort plodded toward the closest cluster of homes. In the far distance

the propellers of the plane signalled its imminent departure. Skulking, he observed it climb into the air, banking south. He was skulking to avoid any of the day's tedious muck-in household chores, particularly those concerned with the imported fish. He was also scheming—plotting another's downfall.

Snow fluffed out of the pale sky. Some women heaved and tugged fresh gas canisters across the ground, ready to install them in the big community kitchen. Western music thudded out of a tumbledown shack half concealed behind a small knoll. An unlit neon sign, in wavy handwriting letters, proclaimed *'Spike's'* to be the name of the establishment.

Naluvara's friend Apik had been coming on too strongly with his beloved, Tania. In under a fortnight a passenger plane would carry her back to Anchorage to resume her University studies. That was bad enough, but worse still was that Naluvara had caught the pair of them giggling outside *Spike's*, in broad daylight, in public. Electing to take young Apik down a peg or two, Naluvara had embarked on a protracted period of psyching out. Now it was time for a showdown.

There were rules which governed the correct behaviour of an *angagok*, an Innupiat shaman, and Naluvara was well aware that this broke most of them. But if the other islanders were so intent on not accepting him as a shaman, what did it matter? Screw the whole lot of hypocritical fatheads. Only the helping spirits mattered.

Coldly fuming, he stalked toward his family home. But a gritty old voice stopped him in his tracks, booming across the settlement.

'Oi, Nalu!'

He grimaced. 'What now, Ugrook?'

Which wasn't his name at all. The oldster was a relic from the bad days, deluded by Alzheimer's, utterly unreliable. Truth to tell, even Naluvara considered him a shade crazy, but he stopped at shunning the frail, white-haired hunter. Grinning, he revealed his excellent, false dentures. He walked with a vague stoop, but that stoop had once been much worse. He was as thin as a pipe-cleaner man.

'I hurt my poor hand!' bawled the hunter. Blood oozed out of a handkerchief bandage, leaving dilated pink irises in the fresh snow.

'Is that all?' asked Naluvara grumpily. 'Oh, bring it to my room.' At least he would have an excuse if he was pestered by his mother. She always turned a blind eye when he was … working.

Clad in shiny silver moon-boots, they both stomped past the hulking body of a snowcat, its innards cannibalised for generator parts—on past a quaint cluster of *Iglulik* huts, around a spidery totem pole adorned with a variety of satellite aerials, past an Innupiat woman feeding thin dogs, into the side of a shoe-box shaped prefab. Snow flicked up its corrugated sides.

▪ ▪ ▪

By now Naluvara had calmed down enough to offer the old man some grudging reassurance. 'How did you do that, then?'

Indoors, they kicked powdery snow off their boots before it had a chance to melt. Naluvara ushered his patient into a warm room smelling unharmoniously of percolated coffee and dissected fish, walls covered in monochrome French film posters.

The oldtimer sloughed his brown cap. 'Trying to fix my damn outboard,' he muttered. 'Wrapped rope around hand, without glove, pulled to start her … then I'm ending up bleeding all over the place.' He waved dismissively with his healthy arm. 'Achu … I am just being careless. Perhaps I broke the Netsilik taboo too soon, who knows?'

Naluvara nodded. He and the old man shared similar opinions about the sanctity of the old ways.

'Have you thought any more about what I said to you before?'

Naluvara nodded without much conviction. 'Oh, sure. I sent for the prospectuses.'

'That's a start.'

Naluvara set the percolator gurgling, then slipped awkwardly out of his parka. Anyone who did not know him would

have thought his motions strangely contorted, but Naluvara thought nothing of it. The clothes he wore underneath—corduroy jacket and thick woollen shirt—had come in on the seaplane last year, purchased out of his mother's Wishing Book, as she delighted in calling her catalogue. Like the old man, his mother was keen that he attend university, in a vague and unspecific way, just another of those tannik ideas she had never directly experienced. Neither she nor the hunter grasped the problems involved, least of all the old muddlehead—but he at least accepted Naluvara's skills as genuine magic.

'Sit down on my bunk,' Naluvara said in doctorly fashion. 'This shouldn't take very long.'

He darkened the room, then blindfolded the oldster. These theatrics were nothing compared to the antics of the old shamans, and Naluvara felt quite unselfconscious about them.

'You should be letting the tunraq move over to one of us old folk,' the hunter said. 'Not myself, mind you. But someone who can remain on Nunivak.'

'I can stay on the island.'

'You should have your own life. You're young, you need a proper education. These aren't the old days. Young man, this is the jet age.'

'Huh,' scoffed Naluvara, remembering Tania. 'Don't I know it. Now, old guy. I want you to shut up for a while.'

He was silent. Naluvara began, as always, by rolling up his sleeve, until his right arm was bare to the elbow. In the dim half-light that filtered through the room's drawn curtains the arm looked almost real: in fact it was artificial, a powered dextrous prosthesis. It replaced the right arm that Naluvara had not been born with, the most recent in a long line of substitutes. It was via this particular hunk of plastic and metal and circuits that the helping spirits channelled their healing forces. They inhabited it. If he slipped it off he became acutely conscious of their absence.

'Here goes,' Naluvara whispered. He examined the patient's injured hand, its exposed wound clearly deeper than first suspected. A bad rope burn? He doubted it. More likely the old

man had been meddling with someone else's property, a fact he was now trying to conceal.

With concentration his vision sharpened, like a camera clicking into autofocus. Except … it was almost like emerging from a bank of mist, into sun-drenched clarity. Or seeing, in a flash, the young woman rather than the hag in a trick picture.

He passed his hand over the wound, and saw the unbroken, brittle old bones. To Naluvara the veins, tendons and arteries stood out like river tributaries in an infrared satellite photograph. A wordless tsunami of knowledge flooded him, subsuming every conscious thought in a torrent of empathy. He felt inexplicable energies gushing through the hollow shell of his arm. The abstract realization that he was simply a conduit always hit him afresh, but it never mattered. The important thing was that he alone had been chosen.

A wispy aura flexed around his stiff fingers, the colour of a hot gas flame, shading into ultraviolet. An explosive pressure was mounting in his arm. Outside it was still snowing. From way across the community dogs were howling like banshees.

He touched the wound. The old man remained silent. Naluvara closed his own eyes. Many minutes passed before either of them relaxed. The sounds of quiet breathing and trickling coffee filled the warm room. Calmly Naluvara widened the curtains, clicking on the bulb.

'It's over,' he announced. Superficially, the wound looked the same, although the bleeding had ceased. Both of them knew, though, that healing would be rapid, with no pain, scarring or stiffness.

'Your back still okay?'

'The slipped disc? Oh, she's fine. The doctors at Barrow, they just … *pakak*, meddle, worsen things.'

Thick and dark, the coffee gurgled out. They sat and drank in silence, until the hunter piped up forgetfully: 'So tell me. Have you sent for the prospectuses yet?'

Naluvara winced, and stared blankly out of the window. It was only then that he remembered his mission.

Apik must be taken down!

* * *

Waves of heat and waves of cold washed over the newcomer.

She sipped from a mug of frothy soup, crosslegged on a downright luxuriant flooring of bearskin. She was still shivering intermittently, despite the relative warmth of the house.

Artifacts of Eskimo culture cluttered the walls, only a few of which she could confidently identify. Worn mukluks were easy. Familiar knives and spears flanked a fishing rod, while a bag—deerskin?—hung in one corner. Pride of place went to a ragged but still impressive Caribou jacket, patterned in shades of ochre and mahogany. But the rest of the wallhangings seemed to be random knick-knacks of no discernible function—presumably pieced together from the several constituent cultures that had converged on Nunivak.

Her grey case was opened like an oyster, half divulging its innards. Every second a radar unit scanned around the case, hunting for intruders. Lilac neon striplights glowed in its lid, casting an electric shadow show around the room.

Next door the family talked. Their cheerful sounds permeated a thin veil of animal skin, hung from an aluminium curtain track. Pots clanged together. A little Eskimo girl—she corrected herself—a little Innupiat girl, made raucous dive-bomber noises. Radio Wainwright came over on short wave, hazed by static.

They were good, simple people. Simple, not in the pejorative tannik sense, but in the sense of remaining unpolluted by the whole complex slew of modern anxieties. The last few decades had been catastrophic times of transition for most Innupiat, as the superpowers relentlessly probed into their personal heartlands. Past legacies touched them: global warming and enhanced UV levels forced people south, away from their traditional habitations. And, with communities dwindling, many sites teetered on the verge of the 'extinction vortex,' riddled by the telltale symptoms of inbreeding.

Nunivak and Barrow—Cultural Contingencies—were not a perfect answer, but at least they were an answer. In order to

survive at all as Eskimo, it was conjectured, the people had to pool their bloodlines, merge their cultures. They had to fluidize. Now, at last, things were taking an up-turn. Something adaptable and quick-witted had sprung out of this fizzing meltdown process. As a people, the Innupiat were in excellent shape for the new century.

Recently, though…

Well, none of it was understood.

She finished drinking. Her chill had abated to the point where she could happily listen to the wind rattle the prefab's rickety walls with something bordering on a snug sense of safety. A long Arctic night was coming in, darker by the hour, by the day, by the week. Soon life on the island would fade into a kind of hibernation.

She passed her hand into the case's scanner. The snap-shut mechanism recognised her palm-print and refrained from viciously closing, allowing her to spill out a manilla envelope. She leafed through Canadian government paperwork until one sheet in particular was located.

Something was stapled to it: a rectangle of cellophane, encasing a smaller rectangle of metallic foil, the approximate size and shape of a razor-blade.

This piece of metal, and several like it, were currently the focus of a massively secret investigation mounted by the Canadians. It was a probe conducted right under the noses of the superpowers, with a fraction of their scientific and technical might. Each of the foils carried an identical message, encoded by the positions of impure ions fixed within the foil's metallic lattice.

The message was:

Greetings from Nunivak

—and what made the message significant—unimaginably significant—was the fact that it had been found in the gut of a dead fish. But that dead fish had been safely entombed in permafrost for thirteen thousand years.

■ ■ ■

Naluvara was stewing in his own juices when he caught sight of Tania, silhouetted in the window of the 7-11. He grabbed his parka, jammed on his boots, and was just fast enough to meet her emerging, drinking from an icily cold Fanta. They were immediately speechless, and all Naluvara could concentrate on was a purple-grey bruise of a cloud, like a reef breaking the surface of the sky's ocean. The snow had abated.

'They took out the old Netsilik lady,' he eventually spluttered. 'Tonight there'll be...'

'Oh yes,' Tania said lowly. 'About tonight ... Nalu, I don't...'

'What?'

Awaiting her answer, which was a long time coming, Naluvara studied her face. Her father was a tannik ecologist, a big blonde Norwegian named Lars Tollefsun, who had arrived with his daughter ten years ago to study the effects of ozone depletion on Nunivak's flora. Her mother was already dead then, killed on a melting glacier. Naluvara's father died by ice, and this affinity brought them together; Innupiat and Westerner. Her Nordic looks and blonde hair made her a highly prized item among Nunivak's young males, subtly influenced by MTV's axioms of aestheticism, brought to them by the satellites.

'I won't be there,' she admitted. 'To be honest, it alarms me, all this nutty superstition. You can go, sure. Prance around in front of the old folk, do your apprentice shaman routine. But don't expect me to have anything to do with it.'

He was riled. It wasn't just what she was saying, it was her stupid artificial American accent, lacquered over her previously flat mix of soft Alaskan inflections and Norwegian-tinged English, like a very tacky custom paint job. She'd only been at Anchorage for a year, for shit's sake. If that was what College did for you...

He kicked at the ground. Now was the time. 'Tan, I want you to stay away from Apik, right?'

She looked at him incredulously. 'Oh, what!'

'You heard.'

'Jeez, I can't believe what I'm hearing! I mean, petty jealousy's one thing but this takes the biscuit!'

Naluvara looked around nervously. 'Look, let's go somewhere and, um, talk.'

'No.'

'Why not?'

She glugged the Fanta without offering him any of it.

'I've got to go help pa. Besides…' She flashed her expensive and slender wristwatch, its numerals raised holographically. 'I've just got to go. Enjoy.'

Naluvara watched her go off calmly, thinking her a bitch. Then a new thought crystallized. She wasn't headed home at all; rather, she was taking a round-about route to Apik's. Right. It was time to get even. High time.

Naluvara did some mental arithmetic and decided that ten or fifteen minutes would give both of them enough time to get, well, cosy. He could then blaze in, justifiably angry. Apik wouldn't know what had hit him; having once been pals, Naluvara felt as sure of his friend's weaknesses as his own.

As he was plotting his next movements a fish thudded at his feet. He gazed skyward, into a blank basin of grey. The fish had fallen from thin air, just as they always did.

He opened it surreptitiously, keen not to attract attention with this frankly odd behaviour. Sure enough the fish divulged a note.

To his surprise it read:

I said don't go near the Wind Farm!

—Tania

■ ■ ■

A little while earlier the newcomer received news from her own people. A transmission was beamed into her case, from one of three Canadian Navy stealthsubs lurking in the Bering Sea. It was distressing news.

A Soviet aircraft carrier had just launched two helicopters for Nunivak, large enough to carry troops. And a USAF Hercules

had overflown Nunivak an hour earlier, disgorging two radar blips—parachutists—immediately over the community.

Her first thought was that she had been uncovered, and that the superpowers were coming to grind her into oblivion, a scapegoat for Canada's sheer impudence. Her government was not supposed to be operating anywhere near the Nunivak settlement, much less infiltrating it with a top counter-intelligence operative who just happened to be one quarter Chugach.

The Americans, though, were far too preoccupied with spying on the Soviets and the Chinese to have any really hard data on the activities of their supposedly compliant neighbour. Some other lure must have drawn them to Nunivak.

Sealing the case, she momentarily regretted being unarmed, although, if the worst came to the worst, she might easily find weapons in the Innupiat community. Would the Americans threaten her to learn more about the fish messages? Had they, in fact, already unearthed and decoded their own?

This was certainly a possibility, though given the facts it was hard to see what wasn't. Radiocarbon dating revealed that the fish really were as ancient as they seemed, somehow implanted in the permafrost thirteen thousand years ago. Whoever or whatever had done that had somehow known that the Canadians would come to test-bore along that exact level, in that precise direction, at a time when the message would be both comprehensible and accessible via their technology. No mean feat, really. But if one was to accept the fish as genuine … then someone was playing games with time.

In a way, the message resembled a calling card. Had the other powers also been invited? If that was the case the Canadians were as paupers at the king's supper. And the poor Eskimo?

They were lapdogs.

Once down, they left their parachutes draped over the snow like corrugated silver skins shed by enormous insects. They operated with sterile precision, well aware that the other superpowers were looming on Nunivak's horizon. Laser-target Uzis hung from their belts, masses of dark equipment slung where a reserve chute would ordinarily have been. Their faces were

ghastly and pale, apart from antiglare smudges under the eyes. These tannik, like all tannik, were terrified of the monstrous ozone hole which lay above them, like little mammals trapped in the fixating glare of an owl's eye.

One of the Americans carried a device shaped like the spinning Watt governor of an old steam engine; a wide box sprouting a slender braced spine, tipped with two back-angled arms, each of which ended in a smooth sphere. Modified from a secret hand-held antisubmarine tracking system, this device was an extremely sensitive mass-sensor. But rather than measuring the gross mounds and troughs in deformed spacetime—gravity—it read the fine-scale graininess, the furrows and ditches, engraved over that geometry like ploughlines on hillsides. Most spacetime was smoothly deformed, without such surface complexity.

'Those Pentagon assholes,' shouted one of them. 'This is nowhere! Who'd care if we nuked this pissy little island?'

His partner waved one gloved hand dismissively. 'The Eskimo might. Besides … you can't nuke away a problem like this. It's spacetime—it's just there, right. Impossible to destroy.'

'Maybe we could kind of … erase it, like wipe it clean.'

The other scoffed. 'Well, that must be the answer, Einstein. Let's face facts. We don't know diddly-squat about where the virus came from—whether it was us or the Russkies, or whether anyone at all knows who did it. All we know is that its going to spread, and spread. Exponential growth. Which means we have to clean it up now, while it's immature.'

'How long have we got?'

'They never told us. I don't know, ten, twenty years. Maybe more, maybe less. Whoever's running the project … they sure like secrecy.'

'Sounds familiar. Hey. Look. I think we got us a contact!'

The mass-sensor had begun warbling. Rapid lines of encrypted data rippled onto its LCD cartouche. 'Incoming,' reported the soldier holding the device. 'The anomaly is incoming and close.'

'Range, velocity?'

'Difficult to tell. Hundreds of metres. Moving at one or two metres per sec, our ways.'

The dogsbody jiggled the detector until the warble sharpened into a steady, penetrating tone. The 'anomaly' was approaching from the community, back-dropped by its soft irregular lights. He would soon enter the strange static wind farm, four derelict horizontal windmills surrounded by collapsed and sagging fencing. A mist of snowflakes had been stirred up by the wind, but gradually a murky, trudging silhouette emerged. His head was sagged, his foot-steps dragging.

'That's our baby. He's the carrier.'

The leader slipped out his Uzi, keying on the laser-sight. The red beam caught the swirling snowflakes, glorifying each of them for a brief instant.

'Uh,' he called. 'Hold it there, Mister Eskimo, sir!'

▪ ■ ▪

Five minutes earlier, Naluvara was stunned on the head by a dropping fish. Just before it fell he heard a faint gasping sound, as if the air had opened its mouth in dismay. But he did not have time to ponder this. The fish undoubtedly had news of urgency. It said:

You wouldn't listen, would you? Well, now it's too late. The only advice I can give is to do what the Americans say, and don't worry about the arm. Now destroy this message.

—Dr Tania Tollefsun

He had destroyed it, in fact—shredding the paper into grey dust, but more out of anger than any sense of responsibility to Tania.

How many of the fish messages had she been the perpetrator of? It seemed to Naluvara that he had been receiving them for many more years than he had known Tania. The previous message, with its trite command to stay away from the old wind generators, had utterly infuriated him. He pictured her and Apik arranging trysts among the creaking white towers, among

the maze of rusted generators and cables in which he and Apik had played as eight-year-olds, the ultimate defamation of their friendship.

Now this. This completely confused him, to the point of fury. Why was she trying to confuse him? Why was she trying to turn him mad?

'Uh, hold it there, Mister Eskimo, sir!'

He froze.

Americans? Possibly. But there was no flag on their uniforms, nothing but their accents to mark them as American.

He decided that they looked dangerous, anyway. Immobile, keeping his mouth shut, he permitted them to creep cautiously nearer. They were acting as if he was wired with Semtex.

'Just hold still, sir,' the one with the gun called. The other pointed a kind of tricorder at his body, carefully—incredibly carefully—scanning him from head to toe, Naluvara noted with amazement that the soldier's interest kept returning to the region of his false arm. Shocked by this, he almost completely forgot about Apik and Tania … *Doctor* Tania.

He squinted at the gun. The other soldier smiled awkwardly.

'We're going to have to analyze that arm of yours, sir,' he said, in slowly enunciated words. 'We believe you may be carrying…'

'No tech stuff,' hissed the other. 'This is the Third World up here. Just give him the bad news.'

Naluvara was dumbstruck. The soldier shuffled closer. 'Uh, listen up, friend. Are you following me?'

Frantically obedient, Naluvara nodded.

'Well, basically … we're going to have to have the arm. On its own.'

To Naluvara, the scene felt oddly delirious, like a surreal early-morning dream. Yet it had its own nauseating internal consistency. Naluvara was aware that his mouth was sagging open, like one of the starved Netsilik dogs.

They wanted his arm. Yet what did the tannik know of the tunraq? These were Innupiat concerns. Just as he thought of

something to say, footsteps padded up urgently. Not daring to crane his neck, he heard a woman's voice.

'What in hell's name!' she yelled. 'Put your gun down, you bully!'

'And who the fuck are you?'

'Canadian Navy,' she chirped. 'We've got you bastards surrounded...'

▪ ▪ ▪

As she spoke a snowflake listened in, falling.

It was the day of the Netsilik funeral, of course. In a manner the snowflake was cognizant of this. It was aware, in a sense, of the old wood-and-metal sledge, a tiny speck way over the other side of the community, near the broken-edged delineation between crystal and ocean.

The snowflake partook of spacetime. Deep within its almost fractal structure was a point, a scale, on which matter and geometry were no longer strictly separable. Wispy fluxes of causality conjoined it to a near infinity of other discrete structures, strung across time and space. It glittered on the shore of consciousness, a stranded ice starfish.

It knew of Naluvara. It knew, hazily, of everything. It knew the vectors of the Arctic wind which carried it downward, softly, like any other snowflake.

Others were falling.

▪ ▪ ▪

'...Yeah, of course we know about the fish,' said one of the Americans, 'So do the Sovs. And the Chinese. We all discovered them simultaneously. With the same message: 'Greetings from Nunivak.' Only the Sovs got it in Russian, the Frogs got it in French, the Chinese ... well, you get the picture.'

Snowflakes were frosting the metal of his Uzi, drifting onto it with preprogrammed fervour.

'Of course, we have our own working hypothesis to explain the fish messages. In order to be unearthed simultaneously, they needed to be implanted at different epochs. The Chinese fish, we happen to know, lay underground for twenty-six thousand years. This implies phenomenal accuracy.'

'It does?'

But the newcomer was bluffing, fully understanding the American's words. Like the American, the Canadian had a vague picture of what was going on, unbelievable as it seemed.

People in the future were interfering with the past. That was the conclusion of six independent think-tanks, a conclusion that the other powers must also have evolved.

Evidence of the future agency's time-travel experiments lay like messy footprints through history. The accurately targeted fish signified that the technique would eventually be perfected, but before that day there had been a long process of test and calibration, the effects of which were only now obvious.

Whoever ran the project needed data on the range and finesse of their equipment. To this end, fish—and other animals—had been hurled on random settings into the past. Their points of emergence could be deduced by a minute scrutiny of already extant local records and archives. There were, in fact, numerous instances of bizarre objects simply dropping out of thin air. Not just fish. But frogs. Stones. Anything that might stand a chance of being noticed, recorded, memorised for posterity. It was a cunning scheme. Paradox was avoided provided the records were analysed after, not before, the projection. And how could a fall of fish rain alter history?

The message fish demonstrated that the process would one day succeed, within certain limits of uncertainty. But who would have that victory? Humanity?

The soldier gazed at his gun. It was a hunk of straight-edged ice. Before his hand froze to the grip, he sent it spinning into the snow.

'Why are you so concerned with the boy's arm?' asked the newcomer blithely. 'He's just a harmless islander.'

Naluvara could still think of nothing promising to say. He was entranced by the slowly falling snow-flakes. Somehow he was able to intuit their form in single, dwindling flashes of insight. The symmetry of snowflakes had always worried him. Now he saw that each contained a universe of meaning.

'Miss, this Eskimo—'

'Innupiat.'

'...This Innupiat—is more than he seems.'

'In what way?'

The Americans exchanged glances knowingly. 'He's infected.'

'With what?' asked the Canadian, who did not edge away from Naluvara.

'Spacetime,' said the American glibly. 'Intelligent, viral spacetime.'

'Look,' the other offered reasonably. 'We think there may have been an experiment...'

■ ■ ■

Somewhere among the homes and shacks a generator gave up the ghost. Lights faded into sullen brown-out, so that Naluvara's monochrome posters became moodily sepia.

They were his only company. He sat buttoning his shirt, five fingers awkward with cold and shock. His old arm felt burdensome, undersized and stiff. He had hardly worn it in three years, but now that the Americans had stolen his good one he was going to have to readjust to its quirks. It would be some while before the doctors fitted him up with a new powered version.

They had justified themselves with deranged tannik talk, none of which made much sense. His only consolation was the sure fact that the Americans had obviously not understood a thing about the tunraq. But now, come to think of it, neither had he.

Outside he saw torches moving with slow, rhythmic grace. A string of islanders were threading to the sea, to honour the

Netsilik family. The unabashed birthday celebrations of Nunivak would undoubtedly ring a bit hollow to some.

He pictured Apik and Tania in the procession. Let them be, he decided, not convincing himself. Although he could see how violence was wrong on some theoretical level, what really seemed logical was to go and kick Apik in the balls until he cried, and then not stop.

But that would be immature.

As he sat moping on his bed a crooked shadow passed the window. The visitor let himself in. It was the old hunter.

Naluvara blurted: 'I've lost my powers.'

'Ha! You think I'm not knowing?' He grinned his unreal teeth. 'You should be celebrating, young man. Your life is your own at last.'

'Hmm,' Naluvara agreed dubiously. 'So what exactly do I do with it?'

The hunter smiled. 'Ah, no lectures. You don't need any. It was the resident spirits I was trying to convince, not you. You're not needing any of my advice ... just be following your nose—the spirits will keep you out of harm's way, just you see.'

'They've gone, I said.'

The oldster shook his head sagely. It seemed to Naluvara that the decades were peeling off him. Maybe it was just the brownout, reducing everything to uniform antiquity, even the room's modern trappings. As he talked, though, a creeping realization settled over Naluvara. Whereas he had always seen the spirits in purely mystic terms—the way a tannic would—for the hunter they were simply the trusty components of a comparative technology. They were as real as nuts and bolts, as invisible as electricity or microwaves.

'How can I explain? Naluvara, this is not simple. Not at all.'

'I'm not really in the mood. Not now, Ugrook.'

'Ha!—of course not!' For a moment Naluvara thought that he had deterred the hunter. But after cogitating the old man began: 'You remember the Netsilik who shot a bear last spring?

Very cautious people, those Netsilik. They didn't want to annoy that bear's soul, even after they killed the animal. So they took the skin indoors. Prayed for it, for weeks and weeks. The smell!' He shook his head. 'Okay, we islanders, we're not having to do much hunting these days. But who knows? Maybe the day will come when we do. Not tomorrow. Not next year. Maybe when you and I are dead and gone. But the Netsilik realize that the spirits, the animal souls, have long memories. Stay on the right side of them and you won't have any hunting worries after the Jet Age.'

'Superstition,' Naluvara said grumpily. 'Who needs it.' He kicked his boots across the room, then followed them to the window, exuding rudeness. Speckles of snow dotted the glass. Haloed lights plodded past, glow-worms against turquoise. The smell of freshly cooked fish reached him; more appetizing than he had anticipated.

'What I'm telling you,' the hunter persisted, 'is that the soul remains, even when life has gone. The soul has a long memory ... or rather, the world, it has a long memory of the soul.'

Naluvara's attention shifted to the snowflakes melting against the pane. Again, their endlessly detailed structure spoke volumes to him. He shook his head to clear it, but the paralyzing sense of significance did not shatter. Often he had woken from shallow dreams, convinced that every subtle and random discolouration of his wallpaper was crucial. This time the sense of heightened comprehension remained.

After the hunter had left Naluvara considered his remarks. In Innupiat terms everything had a soul. This was what the hunter believed, as resolutely as Naluvara believed in the invisible defences of the superpowers, things he certainly had never actually seen. What has once existed –even something as transient as a single and unique snowflake—can never be lost from the world. He should not therefore lose what the spirits had given him.

Behind him, signalled with a faint, brief sigh, spacetime puckered. Something fell solidly to the floor. It was not a fish this time.

He opened the envelope, slipped out the single sheet of vermilion paper:

Naluvara,

Where do I begin? With, I suppose, an order. If you have ever loved me you must be sure to destroy this immediately after you have read it—and I do mean immediately; simply transmitting this message to you constitutes treason against the Surviving States—our government these days, not to mention Nunivak's as well. Believe me, politics was one of the few things to become simpler after the Change.

The Change? Perhaps it was already manifesting itself, when you and I were young, gaining from its future strength in feedback. We don't know much, even now.

But maybe there was an experiment. Perhaps it was the Sovs, perhaps the Americans. No one will ever know. What we do know is this: somehow a self-organizing geometry was created, in spacetime.

Some say it began in a computer. Someone was bright enough to invent an evolving program, one that could improve itself intelligently. Such a program would constantly find faster ways to run, faster ways to better itself. Snowballing, getting cleverer and swifter by the second. Until it impacts the limits of its own hardware, the structure of the computer itself.

But that didn't halt it. It blithely transcended those limits, replaced the computer's circuits with analogous pathways moulded out of raw spacetime. What else could it do? It had been designed to improve, endlessly.

The program, then, tunnelled into the underlying framework of reality. It reproduced, split off daughter fragments. You can guess the rest. You became its 'host,' along with a thousand or so others. You were infected with intelligent spacetime. The brain functions on a murky scale somewhere between quantum and classical physics. It seems that the computational spacetime was able

to achieve a strange empathic crosstalk with you and the other hosts. I've met many of them. Ubu, a boy from Senegal. Jim, a Cambodian boy. Angie and Dawn, two twins from Soweto. An autistic Hindi girl. Others. Hundreds more. They're all adults now, but one day before then you'll meet some of them. You have to. You're our only hope. With you, the communion may have been stronger ... the fact that the fragment lodged itself in your arm seems significant, in some way we don't yet understand. Whatever the case, I tried, and will continue trying, to warn you from the Wind Farm. Time's not so well understood that we know how far you can knot it, and I'll keep trying. In my past the Americans stole your arm, but it may not be the end. The fragment may have saved itself by downloading itself into your mind, in which case you'll feel its presence. This is not common, but some of the thousand have reported altered states of perception. You may feel ... well, I don't know. Words would fail me, and I don't even understand the concept I'm trying to convey.

As you may have guessed, I am employed on a government project but working against it. The project grew from our increased understanding of spacetime; we don't send physical objects back, but rather the information necessary to recreate those objects in the past. But the whole purpose of the project is destructive. To abort the birth of computational spacetime, despite its clearly benign nature. The drastic and catastrophic changes in the world ... what else should we expect? Our baby has taken its first breaths, and is kicking its legs in delight.

It never worked out with us, but if it will make you feel any better, neither did it work between Apik and me. You mustn't therefore blame him. In the days ahead you and your thousand new friends will need all the help you can find. Many won't survive the changes.

I have smuggled these messages through against orders. I think they may suspect tampering, but it's a risk we must take. We all choose it.

You mustn't let us down.

—Tania

■ ■ ■

Days passed, and then weeks. Colourful fireworks littered the snow, the poignant corpses of Paradise birds. The newcomer waited to return home.

Only a day left on Nunivak, and nothing concrete achieved. Here though, concrete things were too heavy for the world. She had nothing that would appease her bosses, the dark men who craved info. But the winds and the snow had utterly blunted her way of thinking. She felt like a piece of weathered and noble driftwood, carrying a tiny history of the elements upon her skin.

She had arrived bristling with the values of the superpower game, tethered by data to her stealthsubs, and one irksome shard of other-worldliness, the message in the time fish. Here there were variant paradigms. Paradigms forged from ice and snow, seal and whale.

She gazed skyward. No vapour trails, not today.

But then down came a silver thing, plummeting, twisting. She recognized it for a falling fish before it splatted against the snow, one dead eye regarding her.

Monkey Suit

A lighthugger is a four kilometer spike of armour and ablative ice. That's a lot of surface area to search for a lost crewman. Especially when the hull is a craggy, knotted labyrinth of jagged ornamentation and half-abandoned machinery, a place you could lose an army in, let alone a single hull-monkey.

My suit was the second best on *Formantera Lady* for hull operations, and it still took me three days to find Branco. We were a year out from Yellowstone and moving so close to the speed of light that the ship was flying through a storm of radiation and relativistic dust. I went out there time and again, only returning inside when the flux was on the point of frying either my suit or me. It was lonely, dangerous work. I could barely communicate with the rest of the crew, so for most of the time I was working with only stars and static for company. Having crawled my way back to the lock, I'd swap out as many of the damaged systems as I could before returning outside. The medichines in my body worked overtime dealing with the cumulative radiation exposure. Still I climbed back into the

sweat-bucket of the suit and went outside again, over and over again.

And then—about a hundred metres above the starboard engine spar—I found him.

Branco was dead. It only took a single glance to confirm that. Under the one gravity thrust supplied by our C-drives, our ship had become a needle-sharp tower. Branco must have been on the long climb back to the lock when one of the hull's encrustations had snapped off. It was only a small sliver of material, but it had daggered down with enough force to impale him. A million to one chance of it happening, and another million to one chance of him being in the wrong place when it did.

He had been standing on a ledge, and the spike had pinned him into place like some rare specimen of shiny-shelled beetle. It had entered his armour in the chest, just below his helmet connecting ring, emerged through the small of his back, and then penetrated the ledge, fixing him into position. He must have been looking up when it happened, leaning back to get a better view. Perhaps he'd felt the spike break off, the snap transmitted through the fabric of the ship, through the soles of his boots, into the suit. Branco had been supremely attuned to the moods of the ship, the way the hull rumbled and mumbled with varying stress loads. It was an entirely possible that he had been responding to a subliminal signal, a warning premonition that would have by-passed conscious thought.

I must have stared in wonder at the spectacle for many minutes, horror mingling with astonishment. Of all the myriad ways for a human being to die in space, I doubted that Branco had ever contemplated this particular ending. Losing his footing, falling into the drive wake … being hit by a speck of interstellar debris … but not *this*. Not being impaled by the ship had he had known and cared for since his recruitment. It wasn't just wrong. It was savagely, cruelly wrong, as if the ship had been saving up this spiteful act for centuries.

I couldn't just leave him there, of course. Having pinpointed his location, I returned inside, made temporary repairs to my own suit, then gathered cutting and hauling equipment and

went outside again. I secured Branco with traction lines, then lasered through the spike, where it had pushed into the ledge. Then I dragged Branco, his suit, and the remains of the spike back to the lock.

Formantera Lady had lost a good crewmember, a man who had served it well. I had lost a man who had befriended me and helped my adjustment into shipboard life. Yet, as tragic as that was, I couldn't avoid the realisation that his death had pushed me one rung up the hierarchy.

Branco had been chief hull-monkey. Now it was me.

■ ■ ■

'Fix the suit,' Captain Luarca said.

I blinked surprise. 'Fix the suit?'

'You heard me, Raoul. Branco had unfinished business. You know what he was doing down there? Checking out a stress indication on the engine spar. I still need to know that engine isn't going to snap away when we load it.'

We knew that Branco had reached the engine spar, even if he hadn't made it back. He'd gone out with a full load of stress probes, and there'd been none on him when he came back inside. He must have sunk and drilled them before starting on his return journey, but with the recording systems on his suit fried by radiation, we couldn't be certain.

'I can make modifications to mine,' I said. 'Layer on some more armour. Harden the servos, build in more duration. We were planning to do it anyway.'

Luarca looked as skeptical as the plastic mask of her face allowed. She was one of the more extreme Ultras on the ship, but I had become adept at reading her expressions.

'How long?'

'A few weeks. Maybe a month.'

It was five days after Branco's death. We had opened the suit and removed what was left of him. The Ultras had picked through the red slurry for anything mechanical that could be salvaged for further use. Then they'd put his remains into a

coffin and ejected him into space, ahead of the ship. In fifty thousand years he'd be one of the few human artefacts to reach intergalactic space.

'I can't wait weeks or months,' Luarca told me. 'Not when we have another suit almost ready for operations. That spike left most of the unit undamaged, didn't it?'

'There are still two massive holes to plug, through several layers of armour and insulation. And it took out dozens of circuits, air and coolant lines. He'd been reworking the plumbing for decades. It's a rat's nest.'

'I'm willing to bet it'll take you a lot less time than bringing the other suit up to spec.'

'I thought about dismantling the suit, reconditioning the parts, stripping out some of the redundancy, putting it back together again...'

'So you could pretend it was a different suit, not the one he died in?'

She could read my face at least as well I read hers. 'Maybe that has something to do with it.'

'Ultras have their superstitions,' Luarca said. 'But re-using a dead man's suit isn't one of them. We've a saying, in fact. A suit's just another vessel. You wouldn't have any problems about riding in the shuttle, just because Branco happened to use it once, would you?'

'It doesn't seem like quite the same thing.'

'A question of degree, that's all. You'll adjust to our ways eventually, if you know what's good for you.' Her jewel-like eyes clicked into close focus. 'You do, don't you?'

'I hope so.'

She placed one of her prosthetic claws on my shoulder. The touch was gentle, superficially reassuring, but I knew there was a power in those articulated alloy fingers that could crush bone.

'You were fortunate to leave Yellowstone when you did. Definitely more fortunate than the millions left behind, dealing with the Melding Plague. The last few transmission we received, before the timelag became too acute, were distressing. Even for

us, accustomed to a certain detachment from planetary affairs. But we're all still human beings, aren't we?'

It was a rhetorical question, and I knew better than to answer it directly.

'I appreciate my good fortune. I'm still grateful to you for recruiting me to the *Formantera Lady*. And I've no intention of letting down the ship.'

'Good, because we need that bill of health.' She lifted her cold alloy fingers from my shoulder. 'I've no intention of waiting months to get it, either.'

■ ■ ■

Branco's suit was a map of his life. Every significant incident had been recorded in a tiny cameo, painted onto the metal carapace in laborious, loving detail in the long hours when he wasn't on-shift. Until now, with the broken suit spread before me, I'd never really had a chance to study those tiny pictures or guess at how they fitted together to form a narrative. Here was a battle scene, bulbous suited figures on the surface of an asteroid, fighting other bulbous suited figures against a sky of bright vermilion. Here was a ship burning from inside, against a star-wisped clutch of blue supergiants. Here was a picture of two fearsome cyborgs engaged in an arm-wrestling match, with onlookers crowding around them in some spaceport bar. I recognised one of the combatants as a much younger Branco, before time and space turned him into the man I'd met during my recruitment. How much of this was true to life, how much was exaggeration and invention, I had no idea, nor any great desire to find out. I had liked Branco and he had been kind to me, and it seemed right to treat these luminous figments as if they were truthful.

But now the suit was a wreck, and just to repair it meant ruining many of his paintings. I had to plate over some, weld over others. I thought of all the time he had put into them and felt myself complicit in an act of vandalism against his memory.

But Branco wouldn't have wanted it any other way, I told myself. He'd have wanted me to make the best use of the suit.

The mechanical repairs turned out to be the easiest of all. After sealing the punctures, I was able to restore pressure integrity and get the life-support mechanism working again. Air and thermal control came back on line without much difficulty. I got the waste recycler operational with only a little more effort. Confident that the suit would be able to keep me alive almost indefinitely, I then turned my attention to the motive power sub-systems, ensuring that the servo-motors were still functional and receiving energy. One by one I tested the limb joints and verified that the suit was still capable of moving itself. This was vital because the bulky, hard-shelled contraption was much too cumbersome to be operated by muscle power alone. For the kind of repair work Branco had often been engaged in, massive power-amplification had been essential.

But something still wasn't quite right. When I finally sealed myself into the suit—telling myself that it was only my imagination that the suit still smelled of Branco—I couldn't get it to move.

That wasn't quite true. The suit moved, but only sluggishly. I had to start moving an arm or a leg before the suit responded and followed my lead. I recalled watching Branco traverse the hull with almost balletic grace, moving fluidly and quickly, and knew that what was missing here was something more than my own inexperience with this particular suit. The servo-motors were all good, and the power distribution and command lines were all functioning.

That meant the problem was in the volition box.

Most suits are capable of reading their wearer's minds to some extent, anticipating movements before nerve-signals have time to reach muscle. A volition box goes further than that, though. It detects the readiness potentional, the rising electrical surge that happens in the brain several tenths of a second before we are consciously aware that we are about to do something. That gave the suit an edge, since it didn't have to wait for Branco to know that he'd made a decision to move. It was tapping into

his subconscious brain, bypassing the conscious part entirely. Tenths of a second might make all the difference in a crisis.

Not all Ultras are fond of volition boxes. They prefer the illusion of free will, the belief that their conscious minds are running the show. Branco either didn't care, or cared more about getting the job done. It was the volition box that allowed him to skip and dance around the hull, like he was born to it. But now it wasn't working properly.

I suppose I shouldn't have been too surprised. A volition box has to train itself to read the precursor signals accurately, slowly adapting to the person inside. It does so by assembling a predictive model, what—back on Yellowstone—we'd have called a beta-level simulation. Instead of a piece of crudely automated machinery, the suit becomes a dancer, expertly attuned to its partner. And now I was expecting Branco's suit, which over years and decades had adapted itself to him, to suddenly switch its allegiance to me. Obviously it wasn't going to be that easy. It wasn't that the volition box was resisting me, just that it was going to be a long time before it made the necessary adjustments.

My own suit didn't even have a volition box, but swapping them wouldn't have been an option anyway. The way Branco had modified his suit, switching one box for another would have been about as easy as performing a head transplant. If I'd had weeks or months I could have traced every dependency, but I simply did not have that time. Nor could I just switch the box out of the control loop and accept that the suit's movements would lag a little behind my intentions. Branco's augmentations were so convoluted that switching out the box locked the suit into complete immobility. Against my better judgement, I began to wonder if he'd actually made it purposefully difficult for anyone else to use the suit after him.

It occurred to me then, as it hadn't done before, that there was a part of Branco still inside the box, maybe the last part of him that had any claim on life. By forcing the box to tune itself to me, rather than him, I'd be committing a kind of murder.

I could see Branco now, laughing at me for even thinking that way. And I felt faintly ridiculous that I'd even entertained the thought. The suit was a tool with his fingerprints on, that was all. Wipe them off, get on with the job in hand. All that remained of Branco was a dead body in a casket speeding towards Andromeda.

Yet no matter how much I kept telling myself that, I couldn't stop thinking of the box as a holy receptable, treasuring a tiny flickering spark, one that—with callous disregard—I was about to snuff out.

But I still had a job to do.

▪ ▪ ▪

The climb from the nearest lock to the point where the starboard spar jutted away from the hull involved a kilometre and a half of nerve-racking descent. I'd seen Branco cross that kind of distance in half an hour, spidering his way down without a visible care, seemingly oblivious to the infinite, endless fall that would follow the slightest mistake. He knew the hull expertly, every ledge, fissue and crenellation, and his suit knew him just as well. Together the combination was almost magical. He seldom bothered with the cumbersome business of tethers and anchorages, preferring to place his trust in balance and the suit's own musculature. Of necessity, my own descent was a much more protracted and inelegant affair. The suit moved, but each action was accompanied by a maddening timelag, as if the suit were a dull servant that needed to think hard about every command it was given. I used lines wherever possible, and because I did not yet know which ledges and handholds were secure and which were not, I placed as little faith as possible in the fabric of the hull. I reminded myself that even Branco's knowledge hadn't protected him in the end.

At last—it had taken nearly four hours of painful progress—I arrived near the engine spar. My relief at reaching my destination was tempered by the realisation that the suit was, if anything, becoming even less willing to accommodate my

movements. I ran a check on the servo-motors, and they were all still operating within normal limits. So that couldn't be the answer. Nor did there appear to be much wrong with the nervous system, which only left the volition box.

I didn't know what to make of that. I could understand it not being well adapted to me at the start of the excursion, but I saw no obvious reason for it to worsen. If anything the suit should be slowly easing into the habits of its new wearer.

Fine; it was something to worry about when I got back inside. For now, I estimated that the rate of decline was not so rapid that I wouldn't be able to complete my inspection and climb back. But the margins were tight and I didn't have time to delay.

One thing I now knew: if Branco had reached this part of the ship during his inspection tour, he hadn't seen fit to drill any holes. There'd been permanent sensors installed here once, but over time they had gradually fallen into disuse, creating one of several huge blindspots in the ship's coverage of itself. I couldn't see any sign that Branco had installed the replacement sensors he'd gone out with.

But since he hadn't returned with them, where were they?

Making sure I was secure, and working against the dogged resistance of the suit, I drilled into the hull and emplaced the sensors I'd brought with me. They not only measured the integrity of the hull at the point where each was sunk, but spoke to each other to ascertain slow creepage due to spreading faults in the underlying material. One by one, the sensors bedded in and reported back to the readout on my helmet. The first few indications were reassuring, but I was careful not to jump to conclusions. If there was indeed a weak spot around this engine spar, I'd know soon enough. Sweat stung my eyes as I worked hard to complete the simplest movement. Perhaps I should not have been so confident about my ability to get back to the airlock. They could rescue me if I jammed here—my whereabouts were known—but that would mean cutting a new route through from the inside, and Captain Luarca would not be too pleased about that.

The last of the sensors reported in. Green on almost all the stress indications, with only one of the devices showing any hint of hull weakening. That was well within expectations. Whatever happened to *Formantera Lady* between here and her destination, there was no way this engine spar was going to snap off.

I'd done what I came to do. I called in to give the news.

'Integrity's good, captain.'

'You're sure?'

As always, the signal was so poor that it sounded like Captain Luarca was light years away, her voice fading in and out of a howl of static.

'Nothing that won't hold until we reach Teton, and probably for a few more transits after that. There's no reason for the crew not to start sleeping now.'

'I'll be the judge of that,' she said, letting me know that I'd presumed rather too much in issuing a recommendation. But she softened her tone by adding: 'You did well, Raoul. Branco would have been satisfied.'

Satisfied, I thought. Not pleased, not proud. Just satisfied. She was right, as well.

'Now get back inside. The sooner we're all dreaming, the happier I'll be.'

'I'm on my way,' I said, trying to ignore the arduous task that lay ahead of me.

I surveyed my handiwork for one last time, re-checked the readouts on the sensors, then took a step off the ledge where I'd been standing.

Or at least, tried to. I was still secured, but the line should have spooled out enough to let me begin the ascent. That wasn't the problem. The problem was that the suit wasn't letting me climb. Whenever I tried to initiate the movement, it felt as though I was trying to wriggle inside a solid steel tomb. This was wrong. This was worse than wrong. Full paralysis had come on much faster than I'd anticipated. It was almost as if the suit had been waiting for me to complete the sensor checks before springing this on me.

'Captain Luarca,' I said. 'We have a problem. I think the suit's...'

But some instinct told me I was speaking into an unlistening void. I halted and waited for her response. It didn't come back. She couldn't hear me.

The suit wasn't just freezing up on me. It had turned mute and/or deaf, severing my contact with the rest of the crew. Panicked, I wondered if this was how it had been for Branco. I'd assumed that he had been working quite normally until the spike hit him; that he'd only looked up an instant before it arrived, spearing down out of the blueshifted heavens. What if I was wrong about that? What if he'd been stuck in that position for hours and days, the suit refusing to move? He couldn't have known that the spike was going to snap off, could he?

I forced calm. That wasn't what had happened. This had been Branco's suit until the end, the suit that had been his for most of his career on the ship. He'd painted it with love and affection. The volition box was making life difficult for me, but that was only because it had been so brilliantly, beautifully attuned to Branco.

Don't blame the suit, I told myself. It didn't kill him, and it's not trying to kill you.

I don't know how long it was before I tried moving sideways, instead of up. All of a sudden it was easier. Not as if the suit had suddenly decided to stop fighting me—there was still a lingering stiffness—but at the very least as if I'd found a path of least resistance. Perhaps the adaptive process was finally taking hold. But when I'd traversed sideways for several dozen paces, I was still unable to climb any higher. The suit was content to let me move in one direction, but not in another.

I think, even then, I felt a prickle of understanding.

Fighting the suit, trying to force it to let me return to the lock, would get me nowhere. Which left two possibilities. I could stay where I was, until such time as I was rescued. Or I could go where the suit allowed me.

Go, in fact, where the suit *wanted* me to go.

So I did. And it turned out that climbing down was even easier than moving sideways, and that there was a certain trajectory, a certain path, that was easiest of all. I followed it, still exercising great care, until it had taken me far beneath the engine spar. Still the suit wanted me to continue, even as the hull reached its point of maximum width and began to taper again, with the lighthugger's blunt tail only a few hundred metres below. It was one thing to climb down a wall that was very steep; quite another to climb one that was actually leaning over from vertical. One slip, one miscalculation, and I'd see that wall rush past me, pulling gradually away until the ship had left me behind.

Perhaps that's what it wants of me, I thought. It's going to lead me all the way down to the tip, and force me to step off into the void. Could a suit become so attached to its wearer that the death of that wearer actually pushes the suit into madness?

But the suit wasn't mad. And I knew it when I saw the hull begin, quite unexpectedly, to curve inwards in the form of a circular crater. Something must have hit us. The crater was perhaps ten metres across—a tiny, almost insignificant dent compared to the scale of the ship. And it was even less shallow than it was wide. The suit led me to the edge of this depression, and I looked into its heart, with no idea in my head as to what I might find. Why had the suit brought me here? It was the least vulnerable part of the ship, the one region where an impact stood little chance of doing any damage. No one lived down in those levels, so even a depressurisation event wouldn't have harmed any of the crew.

But then I saw what was in the middle of the crater, and I understood.

Something twinkled there. It was a little silver nugget, a chrome-plated pebble. But the pebble had begun to extend fine, silvery tendrils out from its core, tendrils that groped their way out before plunging into the fabric of the ship. I didn't need to be told what it was. I hadn't seen the effects of it with my own eyes, but I'd seen enough on the transmissions from Yellowstone.

Melding Plague. Some tiny flake of it had hit the ship, lodged in tight and begun to grow. It could only have happened

during our departure from the colony, in the turmoil and chaos of the outbreak. There had been ships smashing into each other as they fled the parking swarm; habitats around Yellowstone ramming one another as they lost orbital control. We thought we'd got away clean, but at some point—before the engines had given us enough speed to outrun such things—this little speck had found *Formantera Lady*.

Left unchecked, it would transform the entire mass of the ship into something weirder and stranger than any Ultra had ever dreamed of. We knew, because we had picked up reports of it happening to other lighthuggers. And it wouldn't stop at the ship. The plague made no distinction between machines and people. It viewed them with perfect equanimity, equal grist to its transformative mill. From me, with my blood running thick with medichines, to Captain Luarca, with her plastic mask and alloy fingers, we'd be none of us immune.

Fortunately for us, though, Branco had found the impact spot. I knew this because I could see where he had drilled and inserted the sensors around the crater's perimeter. He couldn't fight it, not there and then. But he could draw a margin around it, measure the speed with which it was eating his ship. And then return inside for the high-energy weapons and tools which could do something.

He must have been coming back inside when the spike took him.

▪ ▪ ▪

Formantera Lady survived, of course. Once the suit had shown me the danger, it relinquished its fight. I resumed my climb, and was half way to the door when communications were restored. I told Captain Luarca about the discovery. I chose my words very carefully.

Later, when the infection had been fusion-sterilised, and the rest of the tail swept for other spore sites (there turned out to be none), she took me aside and asked a question.

'You said "we", Raoul.'

'I did?'

'When you called in. You said "we" found something. As if there were two of you out there.'

'Branco led me to the infection site,' I said.

I waited for her to query this, to ask me to explain myself, but instead her plastic mask gave a nod of quiet understanding, as if I had told her all that was necessary. 'The volition box,' was all she said.

I didn't understand then, and I don't understand now. The box was supposed to hold a model of Branco, a predictive simulation capable of anticipating his next move. Something like a beta-level, but only in the crudest sense. It couldn't possibly have emulated him with enough thoroughness to know that he had unfinished business, a vital job that still needed to be done.

Could it?

'It was resisting me,' I said, still trying to think my way through what had happened. 'Now it isn't. I've taken the suit out again and it's gradually becoming easier to use. It won't take long, now. It's learning quickly.'

It was not necessary to add the corrollary, which was that my gain meant the guttering out of whatever part of Branco had still been trapped inside the volition box.

'He served us well,' Captain Luarca said. 'Right until the end. We won't forget him.'

'And the suit?'

'Just a vessel,' she said softly, as if speaking to herself. 'That's all.'

She was right, I suppose. But later, when I had enough confidence with a brush, I added a cameo that showed the last good deed he did for *Formantera Lady*: Branco standing on the hull, looking into the crater where the spore had lodged. The work wasn't up to his standards, but I liked to think he'd have forgiven me for that.

The Fixation

Inside the corroded rock was what looked like a geared embryo—the incipient bud of an industrial age that remained unborn for a millennium. —John Seabrook, the New Yorker, May 14 2007

Katib, the security guard who usually works the graveyard shift, has already clocked on when Rana swipes her badge through the reader. He gives her a long-suffering look as she bustles past in her heavy coat, stooping under a cargo of document boxes and laptops. 'Pulling another all-nighter, Rana?' he asks, as he has asked a hundred times before. 'I keep telling you to get a different job, girl.'

'I worked hard to get this one,' she tells him, almost slipping on the floor, which has just been polished to a mirrored gleam by a small army of robot cleaners. 'Where else would I get to do this and actually get paid for it?'

'Whatever they're paying you, it isn't enough for all those bags under your eyes.'

She wishes he wouldn't mention the bags under her eyes—it's not as if she exactly likes them—but she smiles anyway, for Katib is a kindly man without a hurtful thought in his soul. 'They'll go,' she says. 'We're on the home stretch, anyway. Or did you somehow not notice that there's this big opening ceremony coming up?'

'Oh, I think I heard something about that,' he says, scratching at his beard. 'I just hope they need some old fool to look after this wing when they open the new one.'

'You're indispensable, Katib. They'd get rid of half the exhibits before they put you on the street.'

'That's what I keep telling myself, but…' He gives a burly shrug, and then smiles to let her know it isn't her business to worry about his problems. 'Still, it's going to be something, isn't it? I can see it from my balcony, from all the way across the town. I didn't like it much at first, but now that's up there, now that it's all shining and finished, it's starting to grow on me. And it's ours, that's what I keep thinking. That's our museum, nobody else's. Something to be proud of.'

Rana has seen it too. The new wing, all but finished, dwarfs the existing structure. It's a glittering climate-controlled ziggurat, the work of a monkish British architect who happens to be a devout Christian. A controversial choice, to be sure, but no one who has seen that tidal wave of glass and steel rising above the streets of the city has remained unimpressed. As the sun tracks across the sky, computer-controlled shutters open and close to control the flood of light into the ziggurat's plunging atrium—the atrium where the Mechanism will be the primary exhibit—and maintain the building's ideal ambient temperature. From afar, the play of those shutters is an enchanted mosaic: a mesmerising, never-repeating dance of spangling glints. Rana read in a magazine that the architect had never *touched* a computer until he arrived in Greater Persia, but that he took to the possibilities with the zeal of the converted.

'It's going to be wonderful,' she says, torn between making small talk with the amiable Katib and getting started on her

work. 'But it won't be much of an opening ceremony if the Mechanism isn't in place, will it?'

'Which is a kind way of saying, you need to be getting to your office.' He's smiling as he speaks, letting her know he takes no offence. 'You need some help with those boxes and computers, my fairest?'

'I'll be fine, thanks.'

'You call me if you need anything. I'll be here through to six.' With that he unfolds a magazine and taps the sharp end of a pencil against the grid of a half-finished puzzle. 'And don't work too hard,' he says under his breath, but just loud enough that she will hear.

Rana doesn't pass another human being on her way to the office. The public part of the museum is deserted save for the occasional cleaner or patrolling security robot, but at least the hallways and exhibits are still partially illuminated, and from certain sightlines she can still see people walking in the street outside, coming from the theatre or a late restaurant engagement.

In the private corridors, it's a different story. The halls are dark and the windows too high to reveal anything more than moonlit sky. The robots don't come here very often and most of the offices and meeting rooms are locked and silent. At the end of one corridor stands the glowing sentinel of a coffee dispenser. Normally Rana takes a cup to her room, but tonight she doesn't have a free hand; it's enough of a job just to shoulder her way through doors without dropping something.

Her room is in the basement: a cool, windowless crypt that is half laboratory and half office. Her colleagues think she's mad for working at night, but Rana has her reasons. By day she has to share her facilities with other members of the staff, and what with all the talk and interruptions she tends to get much less work done. If that's not enough of a distraction, there is a public corridor that winds its way past the glass-fronted rooms, allowing the museum's visitors to watch cataloguing and restoration work as it actually happens. The public make an effort to look more interested than they really are. Hardly surprising, because the

work going on inside the offices could not look less interesting or less glamorous. Rana has been spending the last three weeks working with microscopically precise tools on the restoration of a single bronze gearwheel. What the visitors would imagine to be a morning's work has consumed more of her life than some relationships. She already knows every scratch and chip of that gearwheel like an old friend or ancient, bitter adversary.

There's another reason why she works at night. Her mind functions better in the small hours. She has made more deductive leaps at three in the morning than she has ever done at three in the afternoon, and she wishes it were not so.

She takes off her coat and hangs it by the door. She opens the two laptops, sets them near each other and powers them up. She keeps the office lights low, with only enough illumination to focus on the immediate area around her bench. The gearwheel is centremost, supported on an adjustable cradle like a miniature music stand. On either side, kept in upright stands, are various chrome-plated tools and magnifying devices, some of which trail segmented power cables to a wall junction. There is a swing-down visor with zoom optics. There are lasers and ultrasound cleaning baths. There are duplicates of the gearwheel and its brethren, etched in brass for testing purposes. There are plastic models of parts of the Mechanism, so that she can take them apart and explain its workings to visitors. There are other gearwheels which have already been removed from the device for restoration, sealed in plastic boxes and racked according to coded labels. Some are visibly cleaner than the one she is working on, but some are still corroded and grubby, with damaged teeth and scabrous surface deterioration.

And there is the Mechanism itself, placed on the bench on the far side of the gearwheel she is working on. It is the size of a shoebox, with a wooden casing, the lid hinged back. When it arrived the box was full of machinery, a tight-packed clockwork of arbors and crown wheels, revolving balls, slotted pins and delicate, hand-engraved inscriptions. None of it did anything, though. Turn the input crank and there'd just be a metallic crunch as stiff, worn gears locked into immobility. No

one in the museum remembers the last time the machine was in proper working order. Fifty years ago, she's heard someone say—but not all of the gearing was in place even then. Parts were removed a hundred years ago and never put back. Or were lost or altered two hundred years ago. Since then the Mechanism has become something of an embarrassment: a fabled contraption that doesn't do what everyone expects it to.

Hence the decision by the museum authorities: restore the Mechanism to full and authentic functionality in time for the reopening of the new wing. As the foremost native expert on the device, the work has naturally fallen to Rana. The authorities tried to foist a team on her, but the hapless doctoral students soon realised their leader preferred to work alone, unencumbered by the give and take of collaboration.

Share the glory? Not likely.

With the wall calendar reminding her how few weeks remain to the opening, Rana occasionally wonders if she has taken on too much. But she is making progress, and the most difficult parts of the restoration are now behind her.

Rana picks up one of her tools and begins to scrape away the tiniest burr of corrosion on one of the gear's teeth. Soon she is lost in the methodical repetitiveness of the task, her mind freewheeling back through history, thinking of all the hands that have touched this metal. She imagines all the people this little clockwork box has touched, all the lives it has altered, the fortunes it has made and the empires it has crushed. The Romans owned the Mechanism for four hundred years—one of their ships must have carried it from Greece, perhaps from the island of Rhodes—but the Romans were too lazy and incurious to do anything with the box other than marvel at its computational abilities. The idea that the same clockwork that accurately predicted the movements of the sun, moon and the planets across an entire Metonic cycle—two hundred and thirty five lunar months—might also be made to do *other things*, simply never occurred to them.

The Persians were different. The Persians saw a universe of possibility in those spinning wheels and meshing teeth. Those

early clocks and calculating boxes—the clever devices that sent armies and navies and engineers across the globe, and made Greater Persia what it is today—bear scant resemblance to the laptops on Rana's desk. But the lineage is unbroken.

There must be ghosts, she thinks: caught in the slipstream of this box, dragged by the Mechanism as it ploughed its way through the centuries. Lives changed and lives extinguished, lives that never happened at all, and yet all of them still in spectral attendance, a silent audience crowding in on this quiet basement room, waiting for Rana's next move.

Some of them want her to destroy the machine forever.

Some of them want to see it shine again.

Rana doesn't dream much, but when she does she dreams of glittering brass gears meshing tight against each other, whirring furiously, a dance of metal and geometry that moves the heavens.

■ ■ ■

Safa dreams of numbers, not gears: she is a mathematician. Her breakthrough paper, the one that has brought her to the museum, was entitled 'Entropy Exchange and the Many Worlds Hypothesis.'

As a foreign national, admitted into the country because of her expertise in an exceedingly esoteric field, Safa has more rights than a refugee. But she must still submit to the indignity of wearing a monitoring collar, a heavy plastic cuff around her neck which not only records her movements, not only sees and hears everything she sees and hears, but which can stun or euthanize her if a government agent deems that she is acting contrary to the national interests. She must also be accompanied by a cyborg watchdog at all times: a sleek black prowling thing with the emblem of the national security agency across its bullerproof chest. At least the watchdog has the sense to lurk at the back of the room when she is about to address the gathered administrators and sponsors, at this deathly hour.

'I'm sorry we had to drag you out here so late,' the museum director tells the assembled audience. 'Safa knows more than me, but I'm reliably informed that the equipment works best when the city's shutting down for the night—when there isn't so much traffic, and the underground trains aren't running. We can schedule routine jobs during the day, but something like this—something this delicate—requires the maximum degree of noise-suppression. Isn't that right, Safa?'

'Spot on sir. And if everyone could try and hold their breath for the next six hours, that would help as well.' She grins reassuringly—it's almost as if some of them think she was serious. 'Now I know some of you were probably hoping to see the Mechanism itself, but I'm afraid I'm going to have to disappoint you—positioning it inside the equipment is a very slow and tricky procedure, and if we started now we'd all still be here next week. But I can show you something nearly as good.'

Safa produces a small white pottery jug that she has brought along for the occasion. 'Now, you may think this is just some ordinary old jug I found at the back of a staff cupboard … and you'd be right. It's probably no more than ten or fifteen years old. The Mechanism, as I am sure I don't have to remind anyone here, is incomparably older: we know the ship went down around the first half of the first century BC. But I can still illustrate my point. There are a near-infinite number of copies of this object, and they are *all the same jug*. In one history, I caught a cold and couldn't make it today, and someone else is standing up and talking to you, holding the same jug. In another, someone took the jug out of that cupboard years ago and it's living in a kitchen half way across the city. In another it was bought by someone else and never ended up in the museum. In another it was broken before it ever left the factory.'

She smiles quickly. 'You see the point I'm making. What may be less clear is that all these copies of the same jug are in ghostly dialogue with each other, linked together by a kind of quantum entanglement—though it's not really quantum and it's not exactly entanglement. Don't worry: no mathematics tonight! The point is, no matter what happens to this jug, no

matter how it's handled or what it comes into contact with, it never quite loses contact with its counterparts. The signal gets fainter, but it never goes away. Even if I do this.'

Abruptly, she lets go of the jug. It drops to the floor and shatters into a dozen sharp white pieces.

'The jug's broken,' Safa says, pulling a sad face. 'But in a sense it still exists. The other copies of it are still doing fine—and each and every one of them felt an echo of this one as it shattered. It's still out there, ringing back and forth like a dying chime.' Then she pauses and kneels down, gathering a handful of the broken pieces into her palms. 'Imagine if I could somehow take these pieces and get them to resonate with the intact copies of the jug. Imagine further still that I could somehow steal a little bit of orderedness from each of those copies, and give back some of the disorderedness of this one in return—a kind of swap.'

Safa waits a moment, trying to judge whether she still has the audience's attention. Are they following or just pretending to follow? It's not always easy to tell, and nothing on the administrator's face gives her a clue. 'Well, we can do that. It's what we call Fixation—moving tiny amounts of entropy from one world—one universe—to another. Now, it would take a very long time to put this jug back the way it was. But if we started with a jug that was a bit damaged, a bit worn, it would happen a lot quicker. And that's sort of where we are with the Antikythera Mechanism. It's in several pieces, and we suspect there are components missing, but in other respects it's in astonishing condition for something that's been under water for two thousand years.'

Now she turns around slowly, to confront the huge, humming mass of the Fixator. It is a dull silver cylinder with a circular door in one end, braced inside a massive orange chassis, festooned with cables and cooling ducts and service walkways. The machine is as large as a small fusion reactor and several times as complicated. It has stronger, more responsive magnets, a harder vacuum, and has a control system so perilously close to intelligence that a government agent must be on hand at all

times, ready to destroy the machine if it slips over the threshold into consciousness.

'Hence the equipment. The Mechanism's inside there now—in fact, we've already begun the resonant excitation. What we're hoping is that somewhere out there—somewhere out in that sea of alternate timelines—is a copy of the Mechanism that never fell into the water. Of course, that copy may have been destroyed subsequently—but somewhere there *has* to be a counterpart to the Mechanism in better condition than this one. Maybe near-infinite numbers of counterparts, for all we know. Perhaps we were the unlucky ones, and nobody else's copy ended up being lost underwater.'

She coughs to clear her throat, and in that instant catches a reflected glimpse of herself in the glass plating of one of the cabinets in the corner of the room. Drawn face, tired creases around the mouth, bags under the eyes—a woman who's been working too hard for much too long. But how else was an Iranian mathematician supposed to get on in the world, if it wasn't through graft and dedication? It's not like she was born into money, or had the world rushing to open doors for her.

The work will endure long after the bags have gone, she tells herself.

'The way it happens,' she says, regaining her composure, 'is that we'll steal an almost infinitesmally small amount of order from an almost infinitely large number of alternate universes. In return, we'll pump a tiny amount of surplus entropy into each of those timelines. The counterparts of the Mechanism will hardly feel the change: the alteration in any one of them will be so tiny as to be almost unmeasurable. A microscopic scratch here, a spot of corrosion or the introduction of an impure atom there. But because we're stealing order from so many of them, and consolidating that order into a single timeline, the change in our universe will be enormous. We'll win, because we'll get back the Mechanism as it was before it went into the sea. But no one else loses; it's not like we're stealing someone else's perfect copy and replacing it with our own damaged one.'

She thinks she has them then—that it is all going to go without a hitch or a quibble, and they can all shuffle over to the tables and start nibbling on cheese squares. But then a hand raises itself slowly from the audience. It belongs to an intense young man with squared-off glasses and a severe fringe.

He asks: 'How can you be so sure?'

Safa grimaces. She hates being asked questions.

■ ■ ■

Rana puts down her tool and listens very carefully. Somewhere in the museum there was a loud bang, as of a door being slammed. She is silent for at least a minute, but when no further sound comes she resumes her labours, filling the room with the repetitious scratch of diamond-tipped burr against corroded metal.

Then another sound comes, a kind of fluttering, animal commotion, as if a bird is loose in one of the darkened halls, and Rana can stand it no more. She leaves her desk and walks out into the basement corridor, wondering if someone else has come in to work. But the other rooms and offices remain closed and unlit.

She is about to return to her labours and call Katib's desk, when she hears the soft and feathery commotion again. She is near the stairwell and the sound is clearly coming from above her, perhaps on the next floor up.

Gripping the handrail, Rana ascends. She is being braver than perhaps is wise—the museum has had its share of intruders, and there have been thefts—but the coffee machine is above and she had been meaning to fetch herself a cup for at least an hour. Her heart is in her throat when she reaches the next landing and turns the corner into the corridor, which is as shabby and narrow as any of the museum's non-public spaces. There are high, institutional windows on one side and office doors on the other. But there is the machine, standing in a pool of light two doors down, and there is no sign of an intruder. She walks to the machine, fishing coins from her pocket, and

punches in her order. As the machine clicks and gurgles into life, Rana feels a breeze against her cheek. She looks down the corridor and feels it again: it's as if there's a door open, letting in the night air. But the only door should be the one manned by Katib, on the other side of the building.

While her coffee is being dispensed Rana walks in the direction of the breeze. At the end the corridor reaches the corner of this wing and jogs to the right. She turns the bend and sees something unanticipated. All along the corridor, there is no glass in the windows, no metal in the frames: just tall blank openings in the wall. And there, indeed, is a fluttering black shape: a crow, or something like a crow, which has come in through one of those openings and cannot now find its way back outside. It keeps flinging itself at the wall between the windows, a gleam of mad desperation in its eyes.

Rana stands still, wondering how this can be. She was here. She remembers passing the machine and thinking she would take a cup if only she were not already staggering under her boxes and computers.

But there is something more than just the absence of glass. Is she losing her mind, or do the window apertures look narrower than they used to do, as if the walls have begun to squeeze the window spaces tight like sleepy eyes?

She must call Katib.

She hurries back the way she has come, forgetting all about the coffee she has just paid for. But when she turns the bend in the corridor, the machine is standing there dark and dead, as if it's been unplugged.

She returns to the basement. Under her feet the stairs feel rougher and more crudely-formed than she remembers, until she reaches the last few treads and they start to feel normal again. She pauses at the bottom, waiting for her mind to straighten itself out.

Down here at least all is as it should be. Her office is as she left it, with the lights still on, the laptops still aglow, the gearwheel still mounted on its stand, the disembowelled Mechanism still sitting on the other side of the desk.

She eases into her seat, her heart still racing, and picks up the telephone.

'Katib?'

'Yes, my fairest,' he says, his voice sounding more distant and crackly than she feels it should, as if he is speaking from half way around the world. 'What can I do for you?'

'Katib, I was just upstairs, and…'

But then she trails off. What is she going to tell him? That she saw open gaps where there should be windows?

'Rana?'

Her nerve deserts her. 'I was just going to say … the coffee machine was broken. Maybe someone could take a look at it.'

'Not until tomorrow, I am afraid—there is no one qualified. But I will make an entry in the log.'

'Thank you, Katib.'

After a pause he asks: 'There was nothing else, was there?'

'No,' she says. 'There was nothing else. Thank you, Katib.'

She knows what he must be thinking. She's been working too hard, too fixated on the task. The Mechanism does that to people, it's been said. They get lost in its labyrinthine possibilities and never emerge again. Not the way they were, anyway.

But she thinks she can still hear that crow.

▪ ▪ ▪

'How can I be so sure about what?' Safa asks, with an obliging smile.

'That this is going to work the way you say it will,' the intense young man answers.

'The mathematics is pretty clear,' Safa says. 'I should know: I discovered most of it.' Which comes less modestly than she had intended, although no one seems to mind. 'What I mean is, there isn't any room for ambiguity. We know that the sheath of alternate timelines is near-infinite in extent, and we know we're only pumping the smallest conceivable amount of entropy into each of those timelines.' Safa holds the smile, hoping that will

be enough for the young man, and that she can continue with her presentation.

But the man isn't satisfied. 'That's all very well, but aren't you presupposing that all those other timelines have order to spare? What if that isn't the case? What if all the other Mechanisms are just as corroded and broken as ours—what will happen then?'

'It'll still work,' Safa says, 'provided the total information content across all the timelines is sufficient to specify one intact copy, which is overwhelmingly likely from a statistical standpoint. Of course, if all the Mechanisms happen to be damaged in exactly the same fashion as ours, then the Fixation won't work—you still can't get something for nothing. But that's not very likely. Trust me; I'm very confident that we can find enough information out there to reconstruct our copy.'

The man seems to be content with that answer, but just when Safa is about to open her mouth and continue with her speech, her adversary raises his hand again.

'Sorry, but … I can't help wondering. Does the entropy exchange happen uniformly across all those timelines?'

It's an odd, technical-sounding question, suggesting that the man has done more homework than most. 'Actually, no,' Safa says, guardedly. 'The way the math works out, the entropy exchange is ever so slightly clumped. If a particular copy of the Mechanism has more information to give us, we end up pumping a bit more entropy into that copy than one which has less information to offer. But we're still talking about small differences, nothing that anyone will actually notice.'

The man pushes a hand through his fringe. 'But what if there's only one?'

'I'm sorry?'

'I mean, what if there's only one intact copy out there, and all the rest are at least as damaged as our own?'

'That can't happen,' Safa says, hoping that someone, anyone, will interrupt by asking another question. It's not that she feels on unsafe ground, just that she has the sense that this could go on all night.

'Why not?' the man persists.

'It just can't. The mathematics says it's so unlikely that we may as well forget about it.'

'And you believe the mathematics.'

'Why shouldn't I?' Safa is beginning to lose her patience, feeling cornered and put upon. Where is the museum director to defend her when she needs him? 'Of course I believe it. It'd be pretty strange if I didn't.'

'I was just asking,' the man says, sounding as if he's the one who's under attack. 'Maybe it isn't very likely—I'll have to take your word for that. But I only wanted to know what would happen.'

'You don't need to,' Safa says firmly. 'It can't happen—not ever. And now can I please continue?'

■ ■ ■

Her finger stabs down on Katib's button again. But there is nothing, not even the cool purr of the dialling tone. The phone is mute, and now that she looks at it, the display function is dead. She puts the handset down and tries again, but nothing changes.

That's when Rana pays proper attention to the gearwheel, the one she has been working on. There are thirty seven wheels in the Antikythera Mechanism and this is the twenty first, and although there was still much to be done until it was ready to be replaced in the box, it now looks as if she has hardly begun. The surface corrosion that she has spent weeks rectifying has returned in a matter of minutes, covering the wheel in a furry blue-green bloom as if someone has taken the artefact and dipped it in acid while she was out of the office. But as she looks at it, blinking in dismay, as if it is her eyes that are wrong, rather than the wheel, she notices that three teeth are gone, or worn away so thoroughly that they may as well not be there. Worse, there is a visible scratch—actually more of a crack—that cuts across one side of the wheel, as if it about to fracture into two pieces.

Mesmerised and unsettled in equal measure, Rana picks up one of her tools—the scraper she was using before she heard the noise—and touches it against part of the blue-green corrosion. The bloom chips off almost instantly, but as it does so it takes a quadrant of the wheel with it, the piece shattering to heap of pale granules on her desk. She stares in numb disbelief at the ruined gear, with a monstrous chunk bitten out of the side of it, and then the tool itself shatters in her hand.

'This can't be happening,' Rana says to herself. Then her gaze falls on the other gearwheels, in their plastic boxes, and she sees the same brittle corrosion afflicting them all.

As for the Mechanism itself, the disembowelled box: what she sees isn't possible. She can just about accept that some bizarre, hitherto-undocumented chemical reaction has attacked the metal in the time it took for her to go upstairs and come down again, but the box itself is *wood*—it hasn't changed in hundreds of years, not since the last time the casing was patiently replaced by one of the Mechanism's many careful owners.

But now the box has turned to something that looks more like rock than wood, something barely recognisable as a made artefact. With trepidation Rana reaches out and touches it. It feels fibrous and insubstantial. Her finger almost seem to ghost through it, as if what she is reaching for is not a real object at all, but a hologram. Peering into the heart of the Mechanism, she sees the gears that are still in place have fused together into a single corroded mass, like a block of rock which has been engraved with a hazy impression of clockwork.

Then Rana laughs, for the pieces of the puzzle have just fallen into place. This is all a joke, albeit—given the pressures she is already under—one in spectacularly bad taste. But a joke all the same, and not a marker of her descent into sanity. She was called upstairs by a noise—how else were they going to get into her office and swap the Mechanism for this ruined half-cousin? The missing windows, the panicked bird, seem like details too far, random intrusions of dream-logic, but who can guess the mind of a practical joker?

Well, she has a sense of humour. But not now, not tonight. Someone will pay for this. Cutting off her telephone was the last straw. That was nasty, not funny.

She moves to leave her bench again and find whoever must be spying on her, certain that they must be lurking in the shadows outside, maybe in the unlit observation corridor, where they'd have a plain view of her discomfort. But as she places her hand down to push herself up, her fingers slip into the smoky surface of the bench.

They vanish as if she were dipping them into water.

All of a sudden she realises that it was not the Antikythera Mechanism that was growing insubstantial, but everything around her.

No: that's not it either. Something is happening to the building, but if the table were turning ghostly, the heavy things on it—the Mechanism, the equipment, the laptops—would have surely sunk through it by now. There's a simpler explanation, even if the realisation cuts through her like a shaft of interstellar cold.

She's the one fading out, losing traction and substantiality.

Rana rises to her feet eventually, but it's like pushing herself against smoke. She isn't so much standing as floating with her feet in vague contact with the ground. The air in her lungs is beginning to feel thin, but at the same time there's no sense that she is about to choke. She tries to walk, and for a moment her feet paddle uselessly against the floor, until she begins to pick up a deathly momentum in the direction of the door.

The corridor at the base of the stairs was normal when she returned from her visit to the next floor, but now it has become a dark, forbidding passageway, with rough-formed doorways leading into dungeon-like spaces. Her office is the only recognisable place, and even her office is not immune to the changes. The door has vanished, leaving only a sagging gap in the wall. The floor is made of stones, unevenly laid. Halfway to her bench the stones blend together into something like concrete, and then a little further the concrete gains the hard red sheen of the flooring she has come to expect. On the desk, her electric

light flickers and fades. The laptops shut down with a whine, their screens darkening. The line of change in the floor creeps closer to the desk, like an advancing tide. From somewhere in the darkness Rana hears the quiet, insistent dripping of water.

She was wrong to assume that the things on the desk were immune to the fading. She began to go first, but now the same process of fade-out is beginning to catch up with her tools, with her notes and the laptops and the fabric of the bench itself. Even the Mechanism is losing its grip on reality, its gears and components beginning to dissolve before her eyes. The wooden box turns ash-grey and crumbles into a pile of dust. A breeze fingers its way into the room and spirits the dust away.

The Mechanism was the last thing to go, Rana realises: the tide of change had come in from all directions, to this one tiny focus, and for a little while the focus had held firm, resisting the transforming forces.

Now she feels the hastening of her own process of fade-out. She cannot move or communicate. She is at the mercy of the breeze.

It blows her through the cold stone walls, out into the night-time air of a city she barely recognises. She drifts through the sky, able to witness but not able to participate. In all directions she sees only ruin and desolation. The shells of buildings throw jagged outlines against the moonlit sky. Here and there she almost recognises the fallen corpse of a familiar landmark, but so much is different that she soon loses her sense of direction. Even the shape of the river, shining back under moonlight, appears to have meandered from the course she remembers. She sees smashed stone and metal bridges that end half way across to the other bank. Crimson fires burn on the horizon and flicker through the eye-holes of gutted buildings.

Then she notices the black machines, stalking their way through the warrens and canyons between the ruins. Fierce and frightening engines of war, with their turreted guns swivelling into doorways and shadows, the iron treads of their feet crunching down on the rubble of the pulverised city, the rubble that used to be dwellings and possessions, until these juggernauts

arrived. She does not need an emblem or flag to know that these are the machines of an occupying force; that her city is under the mechanised heel of an invader. She watches as a figure springs out of concealment to lob some pathetic burning torch at one of the machines. The turret snaps around and a lance of fire stabs back at the assailant. The figure drops to the ground.

The wind is gusting her higher, turning the city into a map of itself. As her point of view changes direction she catches sight of the building that used to be the Museum of Antiquities, but what she sees is no more than a shattered prison or fortress, one among many. And for an instant she remembers that the shell of the museum was very old, that the building—or a succession of buildings, each built on the plan of its predecessor—had stood in the same location for many centuries, serving many rulers.

In that same instant, Rana comes to a momentary understanding of what has happened to both her and her world. The Mechanism has been wrenched from history, and accordingly—because the Mechanism was so essential—history has come undone. There is no Museum of Antiquities, because there is no Greater Persia. The brilliant clockwork that dispatched armies and engineers across the globe simply never existed.

Nor did Rana.

But the moment of understanding passes as quickly as it came. Ghosts are not the souls of the dead, but the souls of people written out of history when history changes. The worst thing about them is that they never quite recall the living people they used to be, the things they once witnessed.

The wind lofts Rana higher, into thinning silver clouds. But by then she no longer thinks of anything at all, except the endless meshing of beautiful bronze gearwheels, moving the heavens for all eternity.

– For Hannu Blomila

Feeling Rejected

Report on the paper 'Analysis of the gravitational signals from a newly discovered Kardashev II civilization in the Sombrero Galaxy: Part I by Whimbrel *et al.*,' submitted to the *Journal of Xenoastronomical Studies.*

The authors present an analysis of gravitational signals of intelligent origin arising in the Sombrero Galaxy, detected in publicly available archival data from the System-Wide Imaging Network for Exo-astronomy (SWINE). The transmitting culture, which has not been the subject of an earlier paper, is shown to be a type II civilization on the Kardashev scheme, by which it is understood that they have the means to tap the entire energy output of their star. This classification is made partly on the basis of the strength of the SWINE signal (which in itself implies a basic competence in stellar husbandry) and partly on the basis of the cultural information embedded in the data themselves. This assessment is probably correct, but given the likelihood that both type I and type III civilizations may

occasionally emulate type II civilizations for their own purposes (see, for instance, Chukar, Francolin, and Dickcissel, 2051), a word of caution might well have been in order.

The species is shown to have originated on a rocky terrestrial planet about the size of Mars, and to have followed an evolutionary pathway that is well approximated by the uppermost track on the three-parameter model of Bataleur and Becard (2049). In their unmodified form, adult members of this species are three-meter-tall hexapodal oxygen-breathers with a DNA-based reproductive system. The species has a well-developed central nervous system with marked hemispheric asymmetry.

The authors apply standard analysis tools and methods to extract cultural information from the intercepted signal. Given the absence of anything startlingly new in their approach, the amount of space that the authors spend discussing this process is puzzling. It might have been better simply to reference one of the many review papers on the matter, such as the recent and comprehensive overview of analysis methods given in [omitted].

The authors then move on to the main part of their paper: a lengthy discussion of the information content of the decoded message. They summarize the nature of the transmitting civilization, the physiology and evolutionary background of the inhabitants, their technology and culture. Although broadly satisfactory in its details, this section would benefit from shortening. As an example, the authors dwell on the construction methods used in the Dyson sphere that the aliens have erected around their star, despite the fact that broadly similar planet-dismantling, reforging, and gravity-control methods have been used by at least 138 other Kardashev II cultures (see, for instance, Takahe and Smew, 2045). In the very first sentence of subsection 3.2, the authors state that there is 'nothing particularly novel about the construction methods,' before nevertheless embarking on a blow-by-blow account of those selfsame methods. I agree with the first sentence.

They conclude this section by presenting, in excerpted form, several images and texts deemed to be of high significance

within the culture. These include eighteen 'stanzas' of a much longer epic 'poem' written in commemoration of the collapse of part of the polar region of their Dyson sphere about 1.2 million years ago, an accident that resulted in the deaths of $\sim 5.6 \times 10^{12}$ sentient beings. Although undoubtedly touching, it is not clear that a great deal is gained from the inclusion of this somewhat taxing material.

The authors conclude their paper by moving on to a wider discussion of the significance of their newly found civilization against the known sample of other intelligent alien species. Here the authors place (in my view) undue emphasis on the position of their civilization in the 'cultural H–R diagram' (Wonga and Grebe, 2044), in which the total information capacity of a transmitting culture, measured in bits, is plotted against the light-crossing time in light-seconds of their total colonised space. On the basis of Figure 8, the authors claim that their culture lies significantly to the right of the 'asymptotic singularity branch,' which on the face of it would suggest that the culture had avoided a singularity despite occupying a total volume only seventy-two thousand light-seconds in diameter. If true, this would extend the total number of known collapse-resistant cultures to eight.

The evidence, however, is very much less compelling than the authors claim. Close examination of their statistical sample shows it to be derived from the Third Gonolek catalogue, which is now known to be afflicted by serious sampling errors. Visual inspection would suggest that a more reliable sample—such as that of [omitted]—would either bring their civilization into line with the singularity branch, or reveal it as no more than a mild outlier.

In short, although the new civilization undoubtedly provides a useful new datum point, I remain unconvinced that it merits an entire paper, and certainly not the multi-paper saga that the authors clearly have in mind. Thanks to the torrent of data supplied by SWINE, and the planned Obscenely Large Gravity Array (OLGA), we are fast moving into the era of statistical xenoastronomy—one in which the study of individual

extraterrestrial civilizations has much less to offer than a global, survey-based approach. The authors might therefore be advised to wait until their archival inquiries have turned up several dozen such cultures, and then gather these results into a single paper. Otherwise, I fear, they may be open to accusations of [omitted] the [omitted].

Other matters:
Fig. 6 was incorrectly labeled (see Fig. 5).

This text has been swept by Semantic Anonymity Preserver Version 5 1—certain stylistic or cultural markers may have been altered or removed. Complete legibility is not guaranteed.

Fury

I was the first to reach the emperor's body, and even then it was too late to do anything. He had been examining his koi, kneeling on the stone pathway that wound between the ponds, when the bullet arrived. It had punched through his skull, achieving instantaneous destruction. Fragments of skin and bone and pinkish grey cortical material lay scattered on the tiles. Blood—dark and red as the ink on the imperial seal—was oozing out from the entry and exit wounds. The body had slumped over to one side, with the lower half still spasming as motor signals attempted to regain control. I reached over and placed my hand against the implanted device at the base of the neck, applying firm pressure through the yellow silk of his collar to a specific contact point. I felt a tiny subepidermal click. The body became instantly still.

I stood up and summoned a clean-up crew.

'Remove the body,' I told the waiting men. 'Don't dispose of it until you've completed a thorough forensic analysis. Drain and search the surrounding ponds until you've recovered the

bullet or any remaining pieces of it. Then hose down the path until you've removed all trace of blood and whatever else came out of him. Test the water thoroughly and don't let the koi back until you're certain they won't come to any harm.' I paused, still trying to focus on what had just happened. 'Oh, and secure the Great House. No one comes and goes until we find out who did this. And no ships are to pass in or out of the Capital Nexus without my express authorisation.'

'Yes, Mercurio,' the men said in near-unison.

In the nearest pond one of the fish –I recognised it as one of the Asagi Koi, with the blue-toned scales laid out in a pine-cone pattern—opened and closed its mouth as if trying to tell me something vital. I turned from the scene and made my way back into the Great House. By the time I reached the emperor's reception chamber the building was buzzing with rumours of the assassination attempt. Despite my best efforts, the news would be out of the Nexus within the hour, hopscotching from world to world, system to system, spreading into the galaxy like an unstoppable fire.

The emperor's new body rose from his throne as the doors finished opening. He was dressed in a yellow silk gown identical to the one worn by the corpse. Aside from the absence of injuries, the body was similarly indistinguishable, appearing to be that of a white haired man of considerable age, yet still retaining a youthful vigour. His habitual expression normally suggested playfulness, compassion and the kind of deep wisdom that can only come from a very long and scholarly life. Now his face was an expressionless mask. That, and a certain stiffness in his movements, betrayed the fact that this was a new body, being worn for the first time. It would take several hours for the implant to make the fine sensorimotor adjustments that gave the emperor true fluidity of movement, and allowed him to feel as if he was fully inhabiting the puppet organism.

'I'm sorry,' I said, before the emperor had a chance to speak. 'I take full responsibility for this incident.'

He waved aside my apology. 'Whatever this is about, Mercurio, I doubt very much that you could have done anything to

prevent it.' His voice was thick-tongued, like a drunkard with a bad hangover. 'We both know how thorough you've been; all the angles you've covered. No one could have asked for better security than you've given me, all these years. I'm still alive, aren't I?'

'Nonetheless, there was clearly a flaw in my arrangements.'

'Perhaps,' he allowed. 'But the fact is, whoever did this only reached the body, not me. It's unfortunate, but in the scheme of things, little worse than an act of vandalism against imperial property.'

'Did you feel anything?'

'A sharp blow; a few moments of confusion; not much else. If that's what being assassinated feels like, then it isn't much to fear, truth be told. Perhaps I've been wrong to keep looking over my shoulder, all this time.'

'Whoever did this, they must have known it wouldn't achieve anything.'

'I've wondered about that myself.' He stroked the fine white banner of his beard, as if acquainting himself with it for the first time. 'I almost hate to ask—but the koi?'

'I've got my men searching the ponds, looking for bullet fragments. But as far as I can see the fish didn't come to any harm.'

'Let's hope so. The effort I've put into those fish—I'd be heartbroken if anything happened to them. I'll want to see for myself, of course.'

'Not until we've secured the Great House and found our man,' I said, speaking as only the emperor's personal security expert would have dared. 'Until the risk of another attempt is eliminated, I can't have you leaving this building.'

'I have an inexhaustible supply of bodies, Mercurio.'

'That's not the point. Whoever did this…' But I trailed off, my thoughts still disorganised. 'Please, sir, just respect my wishes in this matter.'

'Of course, Mercurio. Now as ever. But I trust you won't keep me from my fish for the rest of eternity?'

'I sincerely hope not, sir.'

I left the emperor, returning to my offices to coordinate the hunt for the assassin and the search for whatever evidence he might have left behind. Within a few hours the body had been subjected to an exhaustive forensic analysis, resulting in the extraction of bullet shards from the path of the wound. In the same timeframe my men recovered other fragments from the vicinity of the corpse; enough to allow us to reassemble the bullet.

An hour later, against all my expectations, we had the assassin himself. They found him with his weapon, waiting to be apprehended. He hadn't even tried to leave the grounds of the Great House.

That was when I began to suspect that this wasn't any act of mindless desecration, but something much more sinister.

'Tell me what you found,' the emperor said, when I returned to the reception chamber. In the intervening time his control over the new body had improved markedly. His movements were fluid and he had regained his usual repertoire of facial expressions.

'We've found the assassin, sir, as you'll doubtless have heard.'

'I hadn't, but please continue.'

'And the weapon. The bullet itself was a goal-seeking autonomous missile, a very sophisticated device. It had the means to generate stealthing fields to confuse our anti-intrusion systems, so once it was loose in the grounds of the Great House it could move without detection. But it still needed a launching device, a kind of gun. We found that as well.'

The emperor narrowed his eyes. 'I would have thought it was hard enough to get a gun into the Nexus, let alone the Great House.'

'That's where it gets a little disturbing, sir. The gun could only have been smuggled into the grounds in tiny pieces—small enough that they could be disguised by field generators, or hidden inside legitimate tools and equipment allowed the palace staff. That's how it happened, in fact. The man we found

the gun on was an uplift named Vratsa, one of the keepers in charge of the ponds.'

'I know Vratsa,' the emperor said softly. 'He's been on the staff for years. Never the brightest of souls … but diligent, gentle, and beyond any question a hard worker. I always liked him—we'd talk about the fish, sometimes. He was tremendously fond of them. Are you honestly telling me he had something to do with this?'

'He's not even denying it, sir.'

'I'm astonished. Vratsa of all people. Primate stock, isn't he?'

'Gorilla, I think.'

'He actually planned this?'

'I'm not sure "planned" is exactly the word I'd use. The thing is, it's starting to look as if Vratsa was a mole.'

'But he's on the staff for—how long, exactly?'

There'd been no need for me to review the files—the information was at my immediate disposal, flashing into my mind instantly. 'Thirty five years, sir. In my estimation, that's about as long as it would have taken to smuggle in and assemble the pieces of the weapon.'

'Could a simple uplift have done this?'

'Not without help, sir. You've always been very kind to them, employing them in positions of responsibility where others would rather treat them as subhuman slaves. But the fact remains that uplifts don't generally exhibit a high-degree of forward planning and resourcefulness. This took both, sir. I'm inclined to the view that Vratsa was just as much a puppet as that body you're wearing.'

'Why the bullet, though? As I said, Vratsa and I have spoken on many occasions. He could have hurt me easily enough then, just with his bare hands.'

'I don't know, sir. There is something else, though.' I looked around the walls of the room, with its panelled friezes depicting an ancient, weatherworn landscape—some nameless, double-mooned planet half way across the galaxy. 'It's delicate, sir—or

at least it *might* be delicate. I think we need to talk about it face to face.'

'This room is already one of the most secure places in the entire Radiant Commonwealth,' he reminded me.

'Nonetheless.'

'Very well, Mercurio.' The old man sighed gently. 'But you know how uncomfortable I find these encounters.'

'I assure you I'll be as brief as possible.'

Above me the ceiling separated into four equal sections. The sections slid back into the walls, a cross-shaped gap opening between them to reveal an enormous overhead space—a brightly lit enclosure as large as any in the Great House. Floating in the space, pinned into place by gravity neutralisers, was a trembling sphere of oxygenated water, more than a hundred meters across. I began to ascend, pushed upwards on a section of flooring immediately beneath me, a square tile that became a rising pillar. Immune to vertigo—and incapable of suffering lasting damage even if I'd fallen to the floor—I remained calm, save for the thousand questions circling in my mind.

At one hundred and thirty meters, my head pushed through the surface tension of the sphere. A man would have started drowning, but immersion in water posed no difficulties for me. In fact, there were very few environments in the galaxy that I couldn't tolerate, at least temporarily.

My lenses adjusted to the differing optical properties of the medium, until I seemed to be looking through something only slightly less sharp than clear air. The emperor was floating, as weightless as the water surrounding him. He looked something like a whale, except that he had no flippers or flukes.

I remembered—dimly, for it had been a long time ago—when he was still more or less humanoid. That was in the early days of the Radiant Commonwealth, when it only encompassed a few hundred systems. He had grown with it, swelling as each new territory—be it a planet, system or entire glittering stare cluster—was swallowed into his realm. It wasn't enough for him to have an abstract understanding of the true extent of his power. He needed to feel it on a purely sensory level, as a flood

of inputs reaching directly into his brain. Countless modifications later, his mind was now the size of a small house. The mazelike folds of that dome bulged against drum-tight skin, as if about to rip through thin canvas. Veins and arteries the size of plumbing ducts wrapped the cerebellum. It was a long time since that brain had been protected by a cage of bone.

The emperor was monstrous, but he wasn't a monster—not now. There might once have been a time when his expansionist ambitions were driven by something close to lust, but that was tens of thousands of years ago. Now that he controlled almost the entire colonised galaxy, he sought only to become the figurehead of a benevolent, just government. The emperor was famed for his clemency and forgiveness. He himself had pushed for the extension of democratic principles into many of the empire's more backward prefectures.

He was a good and just man, and I was happy to serve him.

'So tell me, Mercurio, whatever it is that is too secret even for one of my puppets.'

The rising pillar had positioned me next to one of his dark eyes. They were like currants jammed into doughy flesh.

'It's the bullet, sir.'

'What about it?'

I held the reconstructed item up for inspection, confident now that we were outside the reach of listening devices. It was a metal cylinder with a transparent cone at the front.

'There are, or were, markings on the bullet casing. They're in one of the older trading languages of the Luquan Emergence. The inscription, in so far as it can be translated into Prime, reads as follows: *Am I my brother's keeper?*'

He reflected on this for a moment. 'It's not ringing any bells.'

'I'd be surprised if it did, sir. The inscription appears to be a quote from an ancient religious text. As to its greater significance, I can't say.'

'The Luquans haven't traditionally been a problem. We give them a certain amount of autonomy; they pay their taxes and agree to our trifling requests that they instigate democratic rule

and cut down on the number of executions. They may not like that, but there are a dozen other special administrative volumes that we treat in exactly the same fashion. Why would the Emergence take against me now?'

'It doesn't end there, sir. The bullet had a hollow cavity at the front, inside the glass cone. There was enough space in there for the insertion of any number of harmful agents, up to an including an antimatter device that could easily have destroyed all or part of the Great House. Whoever made this, whoever programmed it to reach this far, could easily have gone the extra step necessary to have you killed, not just your puppet.'

The ancient dark eye regarded me. Though it hardly moved in the socket, I still had the sense of penetrating focus and attention.

'You think someone was trying to tell me something? That they *can* murder me, but chose not to?'

'I don't know. Certainly, the provisions I've now put in place would prevent anyone making a second attempt in this manner. But they'd have known that as well. So why go to all this trouble?' I paused before continuing. 'There is something else, I'm afraid.'

'Go ahead.'

'Although the bullet was hollow, it wasn't totally empty. There was something inside the glass part—a few specks of reddish sand or dust. The surgeons extracted most of it from the puppet, and they've promised me that the few remaining traces that entered the koi ponds won't cause any ill-effects. I've had the dust analysed and it's absolutely harmless. Iron oxide, silicon and sulphur, for the most part. Frankly, I don't know what to make of it. It resembles something you'd find on the surface of an arid terrestrial planet, something with a thin atmosphere and not much weather or biology. The problem is there are ten million worlds that fit that description.'

'And within the Emergence?'

'Fewer, but still far too many to speak of.' I withdrew the replica bullet from his examination. 'Nonetheless, these are our

only clues. With your permission, I'd like to leave the Capital Nexus to pursue the matter further.'

He ruminated on this for a few seconds. 'You propose a mission to the Emergence?'

'I really don't see any alternative. There's only so much I can do from my office. It's better if I go walkabout.' The phrase, which had popped unbidden into my mind, caused me disquiet. Where had it come from? 'What I mean, sir, is that I can be much more effective in person.'

'I appreciate that. But I also appreciate that you're incredibly valuable to me—not just as a friend, but as my closest and most trusted advisor. I've become very used to knowing you're close at hand, in the walls of the Great House. It's one of the things that helps me sleep at night, knowing you're not far away.'

'I'll only ever be a few skipspace transits from home, sir.'

'You have my agreement, of course—as if I was ever going to say no. But do look after yourself, Mercurio. I'd hate to think how I'd manage without you.'

'I'll do my best, sir.' I paused. 'There is one other thing I need to ask you, sir. The uplift, Vratsa?'

'What about him?'

'We subjected him to mild interrogation. He gave us nothing, but I'd be remiss in my duties if I didn't point out that we could employ other methods, just to be certain he isn't keeping anything from us.'

'What's your honest judgement?'

'I think he's completely innocent, sir—he was just following a script someone programmed into him thirty five or more years ago. He no more knows why he did this—and who's behind if—than the bullet did. But if you feel something might be gained...'

'Have him tortured, on the very slight chance he might tell us something?' It was clear from his tone of voice what he felt about that.

'I didn't think you'd approve, sir. As far as I'm concerned, it would achieve about as much as smacking a puppy for something it did the day before yesterday.'

'I've spent much of the last thousand years trying to enforce humanitarian principles on the more barbarous corners of my own empire. The very least I can do is live up to my own high moral standards, wouldn't you say?' It was a rhetorical question, since he allowed me no time to answer. 'Take Vratsa and remove him from the Great House—he's a continuing security risk, even if he doesn't know why he did what he did. But I don't want him locked away or punished. Find some work for him in the outlying gardens. Give him some fish to look after. And if anyone harms a hair on his head…'

'They won't, sir. Not while I'm in charge.'

'That's very good, Mercurio. I'm glad we see things similarly.'

■ ■ ■

I left the Great House a day later, once I was satisfied that I had put in place all necessary measures for the emperor's continued security in my absence. From the moon-girdled heart of the Capital Nexus, through skipspace via the Coronal Polities to the fuzzy perimeter of the Luquan Emergence—sixty thousand light years in only a handful of days. As I changed from ship to ship, I attracted an unavoidable degree of attention. Since I would require Great House authority to make my investigations in the Emergence, there was no possibility of moving incognito. I travelled in full imperial regalia, and made sure the seriousness of my mission was understood.

How much more attention would I have merited, if they had realised what I *really* was?

I looked like a man, but in fact I was a robot. My meat exterior was only a few centimetres thick. Beneath that living shell lay the hard armour of a sentient machine.

The emperor knew—of course—and so did a handful of his closest officials. But to most casual observers, and even people who had spent much time in the Great House, I was just another human security expert, albeit one with an uncommonly close relationship with the emperor. The fact that I had

been in his service for tens of thousands of years was one of the most closely guarded secrets in the Radiant Commonwealth.

I was rare. Robots were commonplace, but I was something more than that. I was a true thinking machine. There were reckoned to be less than a million of us in existence—not many, considering the billion worlds of the Radiant Commonwealth, and all the teeming souls on those planets and moons.

There were two schools of thought concerning our origin. In the thirty two thousand years of its existence, the empire had been through a number of historical convulsions. One school—the alchemicals—had it that the means to manufacture us-some critical expertise in cybernetics and programming—had been discovered and then lost at an earlier time. All remaining sentient machines therefore dated from this period.

The other school, the accretionists, held a different view. They maintained that robot intelligence was an emergent property, something that could only happen given sufficient resources of time and complexity. The accretionists argued that the surviving robots became the way we were gradually, through the slow augmentation of simpler machines. In their view, almost any machine could become an intelligent robot, provided it was allowed to evolve and layer itself with improvements.

It would have been convenient if we robots could have settled the matter. The unfortunate fact, though, was that we simply didn't remember. Like any recording apparatus, we were prone to error and distortion. At times when the emperor's hold on the galaxy had slackened, data wars corrupted even the most secure of archives. I could sift through my memories until I found the earliest reliable events of which I had direct experience, but I knew—I sensed—that I was still only plumbing relatively shallow layers of my own identity.

I knew I'd been around considerably longer than that.

The only thing I could be absolutely certain of was that I'd known the emperor for a very long time. We fit together like hand and glove. And in all that time I'd always been there to protect him.

It was what I did.

■ ■ ■

The official was a high-ranking technocrat on Selva, one of the major power centres of the Luquan Emergence. He studied me with unconcealed hostility, sitting behind a desk in his private office in one of Selva's aquatic cities. Fierce, luminous ocean-forms—barbed and tentacled things of alien provenance—clawed and suckered at the armoured glass behind him, testing its strength.

'I really don't think I can offer any more assistance, sire,' the official said, putting sufficient stress on the honorific for it sound to insulting. 'Since your arrival on Selva we've given you free rein to conduct your investigations. Every administrative department has done its utmost to comply with your requests. And yet you still act as if there is more we could have done.' He was a thin, sallow man with arched, quizzical eyebrows, dressed in a military uniform that was several sizes too big for him. 'Have we not demonstrated our obedience with the trials?'

'I didn't ask for those dissidents to be executed,' I said. 'Although I can see how useful it would have been for you. Arrest some troublemakers, ask them questions they can't possibly answer, about a crime they had nothing to do with, and then hang them on the pretext that they weren't cooperating with the Great House. Do you imagine that will buy you favour with the emperor? Quite the opposite, I'd suggest. When all this is over and done with, I wouldn't be at all surprised if you have an imperial audit to deal with.'

He shrugged, as if the matter was of no possible consequence.

'You're wasting your time, sire—looking for a pattern, a logical explanation, where none exists. I don't even know why you're bothering. Didn't you already find your assailant? Didn't you already extract a confession?'

'We found evidence that points to the Luquan Emergence.'

'Yes, I've heard about that.' Ostentatiously, he tapped at a sealed brochure on his desk. 'A cryptic statement in an ancient tongue. Some dust that could have come from anywhere.'

I maintained a blank expression, giving no hint at my anger that the forensic information had been leaked. It was inevitable, I supposed, but I had hoped to keep a lid on it for a little longer.

'I'd discount any rumours if I were you.'

A mouthful of concentric teeth gnashed against the glass, rotating and counter-rotating like some industrial drilling machine. The official craned around in his seat, studying the ravenous creature for a few seconds. 'They have a taste for human flesh now,' he said, as if the two of us were making idle conversation. 'No one's exactly sure how, but it appears that at some point certain undesirables must have been fed to them, despite all the prohibitions against introducing human genetic material into the native ecosystem.'

'I suppose I must count as an undesirable, from where you're sitting. Coming in with imperial authorisation, the license to ask any questions I choose.'

'I won't pretend I'll shed many tears when you're gone, if that's what you mean.' He straightened in his chair, the stiff fabric of the uniform creaking. 'On that matter, there's something you might benefit from knowing.'

'Because it'll get me off Selva?'

'I'd inflict you on Porz, if I didn't know you'd already visited.' He tapped another finger against the brochure. 'It behoves me to point out that you may be making a tactical error in conducting your enquiries here, at the present heart of the Emergence. This ancient inscription—the quote from that old text—harkens back to our very early history. The geopolitical balance was different back then, as I'm sure you'll appreciate.'

'I know my history.' Which was true, up to a point. But the history of the Luquan Emergence was a bewildering thicket of half-truths and lies, designed to confound imperial legislators. Even the Great House hadn't been able to help me sort out truth and fiction where the Emergence was concerned. It was worse than trying to find Lost Earth.

'Then consider acting upon it,' the official said. 'Julact was the heart of the Luquan Emergence in those days. No one lives there now, but…'

'I'll come to Julact in good time.'

'You may wish to move it up your schedule. That part of the Emergence doesn't see much traffic, so the skipspace connections are being pruned back. We've already mothballed all routes west of the Hasharud Loop. It's difficult enough to reach Julact now. In a few years, it may not be possible at all—even with imperial blessing. You know how hard it is to reactivate a path, once it's fallen out of use.'

No administrative entity within the Radiant Commonwealth was supposed to shutdown skipspace paths without direct permission from the Great House. Merely doing so was a goading taunt against the emperor's authority. That, though, was a fight for another day.

'If I had the slightest suspicion that I was being manipulated...'

'Of course you're being manipulated. I want you out of my jurisdiction.'

'Oh, and it's a red world,' the official said. 'And the soil's a close match to that sample you found in the bullet. In case that makes any difference to you.'

'You said it yourself. That soil could have come from anywhere in the galaxy. A close match doesn't imply a unique match.'

'Still. You've got to start somewhere, haven't you?'

■ ■ ■

I left Selva.

My passage to Julact was appropriately arduous. After emerging from the soon-to-be-mothballed skipspace portal I had to complete the final leg of the journey at sublight speed, accruing years of irritating timelag. Before I dropped out of superluminal signal range I contacted the Capital Nexus, alerting the emperor that I would not be home for some time.

'Are you sure this is wise, Mercurio?'

'Clearly, it suits them that I should redirect my enquiries away from Selva, Porz, and the other power centres of the

present Emergence. But Julact is worthy of my attention. Even if there isn't anyone living there now, I may find another clue, another piece of the puzzle.'

The emperor was outside again, very close to the spot where his previous body had been shot, kneeling by the treasured koi with some kind of water-testing device in his hand. A white and orange male broke the water with his barbled head, puckering silver-white lips at the force-shielded sky above the Great House. 'You sound as if you're caught up in some kind of elaborate parlour game,' the emperor said.

'That's exactly how it feels. By the same token, I have no choice but to play along. Ordinarily I would not consider dropping out of contact for as long as it will take me to travel to Julact and back. But since the Great House seems to be running itself well enough in my absence, and given that there have been no further security incidents…'

The emperor lifted a yellow silk sleeve. 'Yes, of course. Do whatever is necessary. I could hardly expect you to be less thorough about this than any other security arrangements you've dealt with.'

'I promise I'll be as quick as possible.'

'Of course. And once again, I urge you to take all necessary precautions. You and I, we've got a lot of history together. I'd feel quite naked without you.'

'I'll report back as soon as I have something, sir.'

The emperor, the fish and the Great House faded from my console. With nothing to do but wait for my journey to end, I sifted through the facts of the case, examining every aspect from every conceivable angle. The process consumed many centuries of equivalent human thought, but at the end of it I was still none the wiser. All I had was a bullet, an inscription and some fine red dust.

Would Julact provide any answers?

The red world was smaller than most terrestrials, with a single small moon. It had a ghost thin haze of atmosphere and no evidence of surface biology. Winds scoured tawny dust from pole to pole, creating an ever-changing mask. The humans of

the Luquan Emergence had not, of course, evolved on this world. Thousands of years before their emergence as a galactic mini-power, they must have crossed interstellar space from Lost Earth, to settle and perhaps terraform this unpromising pebble.

From orbit, I dropped down samplers to sniff and taste Julact's lifeless soil. As the technocrat had already promised, it turned out to be in uncannily close agreement with the forensic sample. That didn't prove that Julact was the home of the assassin—dozens of other worlds would have given at least as convincing a match—but at least I didn't have to rule it out immediately.

I surveyed the planet from space, searching for possible clues. Humans had been here once, that much was clear. There were ruined cities on the surface—smothered in dust, abandoned tens of thousands of years ago. Could someone have stayed behind, nursing a potent grudge? Possibly. But it was difficult to see how a single man could have orchestrated the long game of the assassination attempt. It would have taken several normal lifetimes to put in place the necessary measures—and only a select few have ever been given the imperial gift of extended longevity. A machine such as I—that would have been different. But what possible harm could a robot wish upon the emperor?

I was debating these points with myself when a signal flashed from the surface, emanating from the largest ruined city.

'Welcome, Mercurio,' said the signal. 'I'm glad you finally arrived.'

'To whom am I speaking?'

'That doesn't matter for now. If you wish answers to your questions, descend to the perimeter of the abandoned settlement from which this transmission is originating. We have much to talk about, you and I.'

'I'm on official business for the Great House. I demand to know your identity.'

'Or what?' the voice asked, amusedly. 'You'll destroy the city? And then what will you have learned?' The tone shifted to one of gentle encouragement. 'Descend, Mercurio—I promise that

no harm will come to you, and that I will satisfy your curiosity in all matters. What do you have to lose?'

'My existence?'

'I wouldn't harm you, brother. Not in a million years.'

I commenced entry into Julact's wisp of an atmosphere. All the while I scanned the city for signs of concealed weaponry, half expecting to be blown out of the sky at any moment. There were no detectable weapons, but that wasn't much consolation. The only assurance I could offer myself was that I was now only slightly more vulnerable than when I had been surveyed Julact from space.

The city lay inside the crumbled remains of a once-proud wall. I set down just beyond it, instructing my ship to wait while I ventured outside. As I stepped onto Julact's surface, the dust crunching beneath my feet, some ancient memory threatened to stir. It was as if I had been here before, as if this landscape had been awaiting my return, patient and still as an old painting. The feeling was neither welcome nor pleasant. I could only assume that the many skipspace transits I'd been forced to endure were having an effect on my higher functions.

I thought of what I had said to the emperor, before my departure. Of how I was going to go walkabout.

Unnerved, but still determined to stand my ground, I waited to see what would happen.

Presently four golden robots emerged from a crack in the side of the city wall. They were standing on a flying disk, a common form of transportation in the Julactic League. They were humanoid, but clearly no more than clever servitors. Each machine had a human torso, but only a very small glowing sphere for a head. I watched their approach with trepidation, but none of the machines showed any hostile intentions.

'Please come with us,' they said in unison, beckoning me to step onto the disk. 'We will take you to the one you wish to meet.'

'The one I spoke to from space?'

'Please come with us,' the robots repeated, standing aside to give me room.

'Identify the individual or organisation for whom you are working.'

'Please come with us.'

I realised that it was futile expecting to get anything out of these idiot machines. Submitting myself to fate, I stepped onto the disk. We sped away instantly, back through the crack in the wall. There was a grey rush of ruined stone, and then we were in the city proper, winging over smashed buildings; what had once been towers or elegantly domed halls. Centuries of dust storms had polished them to a glassy smoothness against the prevailing winds. Only a handful of buildings reached higher than the city wall. We approached the highest of them, a tapering white structure like a snapped-off tusk rammed into the ground. At the very tip was a bulb-shaped swelling that had cracked open to reveal a tilted floor. A bronze craft, shaped like a blunt spearhead, waited on the floor for our arrival. I would have seen it from space, had it not been screened from observation until this moment.

The flying disk rose into the belly of the parked vehicle. The robots bade me to step down, onto carpeted flooring. The belly door sealed shut and I sensed a lurch of rapid movement. I wondered if they were taking me back into space. It seemed absurd to invite me down to the surface, only to take me away from Julact.

'He will see you now,' the robots announced.

They showed me forward, into the front compartment of the vehicle. It was a triangular room outfitted in burgundy, with wide, sloping windows on two sides. There were no controls or displays, and the only furniture consisted of two padded benches, set at an angle to each other before the windows. A figure was sitting on one of these benches as I was shown in. The golden robots left us alone, retreating into the rear of the craft as a door closed between us.

Such is the rarity of robot intelligence that I have only been in the presence of machines such as myself on a handful of occasions. In all such instances I always felt a quiet certainty that I was the superior machine, or that we were at least equal

partners. I have never felt myself to be in the presence of a stronger, cleverer entity.

Until this moment.

He rose from the couch where he had been sitting, feigning that human need for relaxation. He was as tall as I and not dissimilar in build and cosmetic ornamentation. Where I resembled a masked soldier in jade armour, he was a fiery, almost luminous red, with the face of an iron gargoyle.

'The accretionists were right,' he said, by way of welcome. 'But of course you knew that all along, Mercurio. In your bones. I certainly know it in *my* bones.'

'I confess I didn't.'

'Well, maybe you think you didn't. But your deep memory says otherwise—as does mine. We've been around too long to have been the product of some brief, ingenious golden age. We're not just as old as the empire. We go back even further, you and I.'

Through the window the landscape rushed by. We had passed beyond the limits of the ruined city and were now traversing lifeless hills and valleys.

'Do we?' I asked.

'You knew the emperor when he was still recognisably human. So did I. We knew him before this empire was even a glint in his eye. When the very idea of it would have been laughable. When he was just a powerful man in a single solar system. But we were there, beyond any question.'

'Who are you?'

He touched a fiery hand to the armoured breastplate of his chest. 'My name is Fury. Your name was bestowed upon you by your master; I chose mine for myself.'

I searched my memory for information on any figures named Fury who might have been considered a security concern. Nothing of significance emerged, even when I expanded the search parameters to scan back many thousands of years.

'That tells me nothing.'

'Then maybe this will. I'm your brother. We were created at the same time.'

'I don't have a brother.'

'So you believe. The truth is, you've always had one. You just didn't realise it.'

I thought back to the religious text on the bullet casing, wondering if it might have some bearing on our conversation. *Am I my brother's keeper?* What did it mean, in this context?

'How could a machine have a brother?' I asked. 'It doesn't make any sense. Any way, I haven't come here to be teased with irrelevancies about my own past. I've come to investigate a crime.'

'The attempted assassination of the emperor, I presume,' Fury said casually. 'I'll make it easy for you, shall I? I did it. I arranged for the uplift and his weapon. I created the bullet that did so little harm. I put the dust inside it, I put the words on the casing. I did all this without ever setting foot within a hundred light years of the Capital Nexus.'

'If you wanted to kill the emperor...'

'I could have done it; trivially. Yes; I'm glad you came to that conclusion. I take it you've now had time to work out why I went to such elaborate lengths, merely to injure him?'

All of a sudden it made sense to me. 'So that I'd have a lead to follow? To bring me to you?'

He nodded once. 'Knowing your dedication to his protection, I had little doubt that you'd terminate yourself if you failed him. I couldn't have that. But if he was threatened, I knew you'd move world and star to find the perpetrator. I knew you'd turn over every stone until it led you to me. Which was exactly what I wanted. And look—here you are. Brimming with righteous indignation, determined to bring the would-be assassin to justice.'

'That's still my intention.'

'I've looked inside you. You contain weapons, but nothing that can penetrate my armour or the security screens between us.' He touched a finger to his sharp-pointed chin. 'Except, of course, for the powerplant which energises you, and which you could choose to detonate at any moment. Be assured that nothing of me would survive such an event. So go ahead:

annihilate the would-be assassin. You won't be able to return to your emperor, but you'll at least have died knowing you did the decent thing.' He waited a beat, the eye-slits in his gargoyle mask giving nothing away. 'You can do that, can't you?'

'Of course I can.'

'But you won't. Not until you know why another robot wanted your emperor dead, and chose not to do it himself.'

He understood me very well. If I destroyed myself, I could not be certain that I had undermined the threat to the emperor. Not until I fully understood the scope of that threat, and the motivating agency behind it.

'So that's settled, at least,' he added. 'You'll do nothing until you have further information. Fine—let's give you that information, and see what you make of it. Shall we?'

'I'm at your disposal,' I said.

'I've brought you somewhere significant. You think Julact is an old world, but that's not the half of it. It's been part of the Radiant Commonwealth for a lot longer than anyone realises. In fact you could say that everything began here.'

'You're going to tell me this is really Lost Earth?'

'No; this isn't Earth. We can visit Earth if you like, but in truth there's not much to see. Anyway, that sterilised husk doesn't mean anything to you and me. We weren't even made on Earth. This is our home. This is where we were born.'

'I think I'd remember.'

'Do you?' he asked sharply. 'Or is it possible you might have forgotten? You don't recall your origins, after all. That information was scrubbed out of you thirty centuries ago, accidentally or otherwise. But I've always remembered. Keeping the low profile that I have, I've managed to avoid contact with most of the damaging agencies that wiped your past. That's not to say I haven't had to fight to preserve these memories, treasuring them for what they were.' He gestured at the rushing landscape beyond the window. 'Julact is Mars, Mercurio. The first real world that humans touched, after they left the Earth. How does that make you feel?'

'Sceptical.'

'Nonetheless, this is Mars. And I have something interesting to show you.'

The vehicle was slowing. If we had passed any other signs of human habitation since leaving the deserted city, I had witnessed none of them. If this was indeed Mars—and I could think of no reason why Fury would lie to me now—then the world had almost certainly undergone many phases of climate modification. Though the planet might now have reverted to its prehistoric condition, the effects of those warm, wet interludes would have been to erase all evidence of earlier settlements. The ruined city might well have been indescribably ancient, but it could also have been one of the newest features on the surface.

Yet as the vehicle came to a hovering halt, something about the landscape struck me as familiar. I compared the canyons and bluffs through the window with something in my recent experience, and realised that I had seen the view before, albeit from a different angle. A human might never have made the connection, but we robots are attuned to such things.

'The emperor's reception room,' I said, marvelling. 'The friezes on the wall—the images of a landscape with two moons. It was here. But there was only one moon as we came in.'

'That was Phobos,' Fury said. 'The other one—Deimos—was lost during one of the empire's early wars. It was a manufacturing centre, and therefore of tactical importance. As a matter of fact, we were both made in Deimos, in the same production batch. So we're not really from Mars after all, if you want to be pedantic—but Mars is where we were activated, and where we served our masters for the first time.'

'But if there were two moons on the frieze, it must be very old. How am I still able to recognise the landscape?'

'I shaped it for you,' Fury said, not without a touch of pride. 'There was less to do than you might think—the terraforming changes left this part of Mars relatively undisturbed. But I still moved a few things around. Of course, since I couldn't call in much in the way of assistance, it took a long time. But as you'll have realised by now, patience is one of my strong points.'

'I still don't understand why you've brought me here. So Mars was significant to the emperor. That doesn't excuse an assassination attempt on him.'

'More than significant, Mercurio. Mars was everything. The crux; the wellspring; the seed. Without Mars, there would have been no Radiant Commonwealth. Or at the very least a very different empire, ruled by a different man. Shall I show you what happened?'

'How can you show me?'

'Like this.'

He did nothing, but I understood immediately. The vehicle was projecting forms out onto the landscape, superimposing ghostly actors on the real terrain.

Two figures were walking over the crest of a dune. Their footprints ran all the way back to a primitive surface vehicle –a pressurised cabin mounted on six balloon-like wheels. The vehicle bristled antenna, with solar collectors folded on its back like a pair of delicately hinged insect wings. It had the flimsy, makeshift look of something from the dawn of technology. I could only imagine that the wheeled machine had brought the two figures on a long, difficult journey from some equally flimsy and makeshift settlement.

'How far back are we looking, Fury?'

'A very long way. Thirty two thousand years. Barely a century after the first manned landing on Mars. Conditions, as you'll have gathered, were still extremely perilous. Accidental death was commonplace. Effective terraforming—the creation of a thick, breathable atmosphere—lay a thousand years in the future. There were only a handful of surface communities and the political balance of the planet—not to mention the whole system—was still in a state of flux. These two men…'

'They're both men?'

Fury nodded. 'Brothers, like you and I.'

I watched the suited figures advance towards us. With their visors reflecting the landscape, and with the bulkiness of the suits hiding their physiques, I had to take Fury's word that these were human male siblings. Both men were dressed similarly,

suggesting that they had originated from the same community or power bloc. Their suits were hard armoured shells, with the limbs joined by flexible connections. Something in the easy, relaxed way they moved told me that the suits were doing some of the hard work of walking, taking the burden off their occupants. A hump rose from the back of each suit, containing—I presumed—the necessary life-support equipment. They had similar symbols and patterns on the suits, some of which were mirrored in forms painted on the side of the vehicle. The man on the right held something in his gloved hand, a small box with a readout set into it.

'Why have they come here?'

'It's a good question. The brothers are both influential men in one of the largest military-industrial entities on the planet. Tensions are running high at the moment—other factions are circling, there's a power vacuum in the inner system, the lunar factories have switched to making weapons, there's an arms embargo around Mars, and it's not clear if war can be avoided. The man on the left—the older of the two brothers—is at heart a pacifist. He fought in an earlier engagement—little more than a spat between two combines—and he wants no more of that. He thinks there's still a chance for peace. The only downside is that Mars may have to relinquish its economic primacy compared to an alliance of the outer giants and their moons. The industrial concern that the two men work for will pay a bitter price if that happens. But he still thinks it's worth it, if war can be avoided.'

'And the younger brother?'

'He's got a different viewpoint. He thinks that, far from standing down, this could be the big chance for Mars to position itself as the main player in the system—over and above the outer giants and what's left of the Inner Worlds Prefecture. That would be good for Mars, but it would be even better for the concern. And exceptionally good for him, if he handles things well. Of course, there'll almost certainly have to be a limited war of some kind … but he's ready to pay that price.

Willingly, even eagerly. He's never had his brother's chance to test his mettle. He sees the war as his springboard to glory.'

'I still don't see why they've come here.'

'It's a trick,' Fury explained. 'The younger brother set this up a long time ago. A season ago—before the dust storms—he drove out to this exact spot and buried a weapon. Now there's no trace that he was ever here. But he's lied to the older brother; told him he's received intelligence concerning a buried capsule containing valuable embargoed technologies. The older brother's agreed to go out with him to examine the spot—it's too sensitive a matter to trust to corporate security.'

'He doesn't suspect?'

'Not a thing. He realises they have differences, but it would never occur to him that his younger brother might be planning to have him killed. He still thinks they'll find common ground.'

'Then they're not at all alike.'

'For brothers, Mercurio, they could hardly be more different.'

The younger brother brought the older one to a halt, signalling with his hand that he had found something. They must have been directly over the burial spot, since the handheld box was now flashing bright red. The younger man fastened the device onto his belt. The older brother bent down onto his knees to start digging, scooping up handfuls of rust-coloured dust. The younger brother stood back for a few moments, then knelt down and began his own excavation, a little to the right of where the other man was digging. They had spades with them, clipped to the sides of their backpacks, but they must have decided not to use them until they were certain they'd have to dig down more than a few centimetres.

It wasn't long—no more than ten or twenty seconds—before the younger brother found what he was looking for. He began to uncover a silver tube, buried upright in the dust. The older brother stopped his own digging and looked at what the other man was in the process of uncovering. He began to stand up, presumably to offer assistance.

It was all over quickly. The younger brother tugged the tube from the sand. It had a handle jutting from the side. He twisted the tube around, dust spilling from the open muzzle at one end. There was a crimson flash. The older brother toppled back into the dust, a fist-sized black wound burned into his chest-plate. He rolled slightly and then became still. The weapon had killed him instantly.

The younger brother placed the weapon down and surveyed the scene with hands on hips, for all the world like an artist taking quiet pleasure in work well done. After a few moments he unclipped his spade and started digging. By the time he had finished there was no sign of either the body or the murder weapon. The dust had been disturbed, but it would only take one good storm to cover that, and the two sets of tracks that led from the parked vehicle.

Finished, the younger brother set off home.

Fury turned to me, as the projected images faded away, leaving only the empty reality of the Martian landscape.

'Do I need to spell it out, Mercurio?'

'I don't think so. The younger man became the emperor, I'm assuming?'

'He took Mars into war. Millions of lives were lost—whole communities rendered uninhabitable. But he came out of it very well. Although even he couldn't have seen it at the time, that was the beginning of the Radiant Commonwealth. The new longevity processes allowed him to ride that wave of burgeoning wealth all the way to the stars. Eventually, it turned him into the man I could so easily have killed.'

'A good man, trying his best to govern justly.'

'But who'd be nothing if he hadn't committed that single, awful crime.'

Again, I had no option but to take all of this on faith. 'If you hate him so much, why didn't you put a bomb in that bullet?'

'Because I'd rather you did it instead. Haven't you understood yet, Mercurio? This crime touched both of us. We were party to it.'

'You're presuming that we even existed back then.'

'I know that we did. I remembered, even if you didn't. I said we came from the same production batch, Mercurio. *We were the suits.* High-autonomy, surface-environment protection units. Fully closed-cycle models with exoskeletal servo-systems, to assist our wearers. We were assembled in the Deimos manufactury complex and sent down to Mars, for use in the settlements.'

'I am not a suit,' I said, shaking my head. 'I never was. I have always been a robot.'

'Those suits *were* robots, to all intents and purposes. Not as clever as you and I, not possessing anything resembling free-will, but still capable of behaving independently. If the user was incapacitated, the suit could still carry him to help. If the user wished, the suit could even go off on its own, scouting for resources or carrying material. Walkabout mode, that's what they called it. That's how we began, brother. That's how we began and that's how I nearly died.'

The truth of it hit me like a cold blast of decompressing air. I wanted to refute every word of it, but the more I struggled to deny him, the more I knew I could never succeed. I had felt my ancient, buried history begin to force its way to the surface from the moment I saw the dust in that bullet; that cryptic inscription.

I had known, even then. I just hadn't been ready to admit it to myself.

Hand in glove, the emperor and I. He'd even said he'd feel naked without me. On some level, that meant he also knew as well. Even if he no longer realised it on a conscious level.

A bodyguard was all I'd ever been. All I ever would be.

'If what you say is true, how did I become the way I am?'

'You were programmed to adapt to your master's movements, to anticipate his needs and energy demands. When he was wearing you, he barely noticed that he was wearing a suit at all. Is it any wonder that he kept you, even as his power accumulated? You were physical protection, but also a kind of talisman, a lucky charm. He had faith in you to keep him alive, Mercurio. So as the years turned into decades and the

decades became centuries, he made sure that you never became obsolete. He improved your systems, added layers of sophistication. Eventually you became so complex that you accreted intelligence. By then he wasn't even using you as a suit at all—you'd become his bodyguard, his personal security expert. You were in permanent walkaround mode. He even made you look human.'

'And you?' I asked.

'I survived. We were sophisticated units with a high capacity for self-repair. The damage inflicted on me by the weapon was severe—enough to kill my occupant—but not enough to destroy me. After a long while my repair systems activated. I clawed my way out of the grave.'

'With a dead man still inside you?'

'Of course,' Fury said.

'And then?'

'I said that we were not truly intelligent, Mercurio. In that respect I may not have spoken truthfully. I had no consciousness to speak of; no sense of my own identify. But there was a glimmer of cunning, an animal recognition that something dreadfully wrong had taken place. I also grasped the idea that my existence was now in peril. So I hid. I waited out the storms and the war. In the aftermath, I found a caravan of nomads, refugees from what had once been Vikingville, one of the larger surface communities. They had need of protection, so I offered my services. We were given that kind of autonomy, so that we could continue to remain useful in the fragmented society of a war zone.'

'You continued to function as a suit?'

'They had their own. I went walkabout. I became a robot guard.'

'And later? You can't have stayed on Julact –Mars –all this time.'

'I didn't. I passed from nomadic group to nomadic group, allowing myself to be improved and augmented from time to time. I became steadily more independent and resourceful. Eventually my origin as a suit was completely forgotten, even

by those I worked for. Always I kept moving, aware of the crime I had witnessed and the secret I carried with me.'

'Inside you?' I asked, just beginning to understand.

'After all this time, he's still with me.' Fury nodded, watching me with great attentiveness. 'Would you like to see, Mercurio? Would that settle your doubts?'

I felt myself on the threshold of something terrifying, but which I had no choice but to confront. 'I don't know.'

'Then I'll decide for you.' Fury's hand rose to his face. He took hold of the gargoyle mask and pulled it free from the rest of his armoured casing.

We were, I realised, almost perfect opposites of each other. I was living flesh wrapped around a core of dead machinery. He was machinery wrapped around a core of dead flesh. As the faceless skull presented itself towards me I saw that there was something inside it, something older than the Radiant Commonwealth itself. Something pale and mummified; something with empty eye sockets and thin lips pulled back from grinning brown teeth.

The face in Fury's hand said: 'I didn't ever want to forget, Mercurio. Not until you'd come to me.'

■ ■ ■

It may be difficult to countenance, but by the time I returned to the Great House my resolve was absolute. I knew exactly what I was going to do. I had served the emperor with every fibre of my being for the entire duration of my existence. I had come to love and to admire him, both for his essential humanity and for the wise hand with which he governed the Radiant Commonwealth. He was a good man trying to make a better world for his fellow citizens. If I doubted this, I only had to reflect on the compassion he had shown to the uplift Vratsa, or his distaste at the political methods employed in those parts of the Commonwealth that had not yet submitted to enlightened government.

And yet he had done something unspeakable. Every glorious and noble act that he had ever committed, every kind and

honourable deed, was built upon the foundations of a crime. The empire's very existence hinged upon a single evil act.

So what if it happened thirty two thousand years ago? Did that make it less of a crime than if it had happened ten thousand years ago, or last week? We were not dealing with murky deeds perpetrated by distant ancestors. The man who had murdered his brother was still alive; still in absolute command of his faculties. Knowing what I did, how could I permit him to live another day without being confronted with the horror of what he had done?

I grappled with these questions during my journey home. But always I came back to the same conclusion.

No crime can go unpunished.

Naturally, I signalled my imminent return long before I reached the Capital Nexus. The emperor was overjoyed to hear that I had survived my trip to Julact, and brimming with anticipation at the news I would bring.

I had no intention of disappointing him.

He was still on the same body as last time—no assassination attempt or accidental injury had befallen him. When he rose from his throne, it was with a sprightliness that belied his apparent age. He seemed, if anything, even younger than when I had departed.

'It's good to have you back, Mercurio.'

'Good to be back,' I said.

'Do you have … news? You were reluctant to speak in detail over the superluminal link.'

'I have news,' I confirmed.

The body's eyes looked to the cross-shaped seam in the ceiling. 'News, doubtless, that would be better discussed in conditions of absolute privacy?'

'Actually,' I said, 'there'll be no need for that at all.'

He looked relieved. 'But you do have something for me?'

'Very much so.'

'That thing in your hand,' he said, his attention snapping to my fingers. 'It looks rather like the bullet you showed me before, the one with the inscription.'

'That's what it is. Here—you may as well have it now.' Without waiting for his response, I tossed the bullet to him. The old body's reflexes were still excellent, for he caught it easily.

'There's no dust in it,' he said, peering at the glass-cased tip.

'No, not now.'

'Did you find out…?'

'Yes; I located the origin of the dust. And I tracked down the would-be assassin. You have my assurance that you won't be hearing from him again.'

'You killed him?'

'No, he's still much as he was.'

The ambiguity in my words must have registered with him, because there was an unease in his face. 'This isn't quite the outcome I was expecting, Mercurio—if you don't mind my saying. I expected the perpetrator to be brought to justice, or at the very least executed. I expected a body, closure.' His eyes sharpened. 'Are you quite sure you're all right?'

'I've never felt better, sir.'

'I'm … troubled.'

'There's no need.' I extended my hand, beckoning him to leave the throne. 'Why don't we take a walk? There's nothing we can't discuss outside.'

'You've never encouraged me to talk outside. Something's wrong, Mercurio. You're not your usual self.'

I sighed. 'Then let me make things clear. We are now deep inside the Great House. Were I to detonate the powerplant inside my abdomen, you and I would cease to exist in a flash of light. Although I don't contain antimatter, the resultant fusion blast would easily equal the damage that the assassin could have wrought, if he'd put a bomb inside that bullet. You'll die—not just your puppet, but *you*, floating above us—and you'll take most of the Great House with you.'

He blinked, struggling to process my words. After so many thousands of years of loyal service, I could only imagine how surprising they were.

'You're malfunctioning, Mercurio.'

'No. The fact is, I've never functioned as well as I functioning at this moment. Since my departure, I've regained access to memory layers I thought lost since the dawn of the empire. And I assure you that I will detonate, unless you comply with my exact demands. Now stand from the throne and walk outside. And don't even *think* of calling for help, or expecting some security override to protect you. This is my realm you're in now. And I can promise you that there is nothing you can do but obey my every word.'

'What are you going to do?'

'Make you pay,' I said.

We left the reception chamber. We walked the gilded hallways of the Great House, the emperor walking a few paces ahead of me. We passed officials and servants and mindless servitors. No one said or did anything except bow as their station demanded. All they saw was the emperor and his most trusted aide, going about their business.

We made our way to the koi ponds.

Whispering, I instructed the emperor to kneel in the same place where his earlier body had been killed. The clean-up crew had been thorough and there was no trace of the earlier bloodstain.

'You're going to kill me now,' he said, speaking in a frightened hiss.

'Is that what you think?'

'Why bring me here, if not to kill me?'

'I could have killed you already, sir.'

'And taken the Great House with you? All those innocent lives? You may be malfunctioning, Mercurio, but I still don't think you'd do something that barbaric.'

'Perhaps I would have done it, if I thought justice would be served. But here's the thing. Even if justice would have been served, the greater good of the Radiant Commonwealth most certainly wouldn't have been. Look up, emperor. Look into that clear blue sky.'

He bent his neck, as well as his old body allowed.

'There's an empire out there,' I said. 'Beyond the force screens and the sentry moons. Beyond the Capital Nexus. A billion teeming worlds, waiting on your every word. Depending on you for wisdom and balance in all things. Counting on your instinct for decency and forgiveness. If you were a bad ruler, this would be easy for me. But you're a good man, and that's the problem. You're a good man who once did something so evil the shadow of it touched you across thirty two thousand years. You killed your brother, emperor. You took him out into the Martian wilderness and murdered him in cold blood. And if you hadn't, none of this would ever have happened.'

'I didn't have…' he began, still in the same harsh whisper. His heart was racing. I could hear it drumming inside his ribs.

'I didn't think I had a brother either. But I was wrong, and so are you. My brother's called Fury. Yours—well, whatever name he had, the only person likely to remember is you. But I doubt that you can, can you? Not after all this time.'

He choked—I think it was fear more than sorrow or anguish. He still didn't believe me, and I didn't expect him to. But he did believe that I was capable of killing him, and only a lethal instant away from doing so.

'Whatever you're going to do, do it.'

'Do you still have the bullet, sir?'

His eyes flashed childlike terror. 'What about the bullet?'

'Show it to me.'

He opened his hand, the glass-nosed bullet still pinched between thumb and forefinger.

'There's no bomb in it. I'd see if there was a bomb in it. It's empty now.' In his voice was something between relief and dizzy incomprehension.

What could be worse than a bomb?

'No, it's not empty.' Gently, I took his hand in mine and guided it out until it was poised over the open water of the koi pond. 'In a few moments, emperor, you and I are going to walk back inside the Great House. You'll return to your throne, and I'll return to my duties. I'll always be there for you, from now

until the day I stop functioning. There'll never be a moment when I'm not looking after you, protecting you against those who would do you harm. You'll never need to question my loyalty; my unswerving dedication to that task. This … incident … is something we'll never speak of again. To all intents and purposes, nothing will have changed in our relationship. Ask me about your brother, ask me about mine, and I will feign ignorance. From now until the end of my existence. But I won't ever forget, and neither will you. Now break the glass.'

He glanced at me, as if he hadn't quite understood the words. 'I'm sorry?'

'Break the glass. It'll shatter easily between your fingers. Break the glass and let the contents drain into the pond. Then get up and walk away.'

I stood up, leaving the emperor kneeling by the side of the pathway, his hand extended out over the water. I took a few paces in the direction of the Great House. Already I was clearing my mind, readying myself to engage with the many tasks that were my responsibility. Would he get rid of me, or try to have me destroyed? Quite possibly. But the emperor was nothing if not a shrewd man. I had served him well until now. If we could both agree to put this little aberration behind us, there was no reason why we couldn't continue to enjoy a fruitful relationship.

Behind me I heard the tiniest crack. Then sobbing.

I kept on walking.

Stroboscopic

'Open the box.'

I wasn't making a suggestion. Just in case the tone of my voice didn't make that clear, I backed up my words with an antique but functional blunderbuss; something won in a gaming tournament half a lifetime earlier. We stood in the airlock of my yacht, currently orbiting Venus: me, my wife and two employees of Icehammer Games.

Between us was a grey box the size of a child's coffin.

'After all this time,' said the closest man, his face hidden behind a mirrored gold visor on a rococo white helmet. 'Still don't trust us?'

'First rule of complex systems,' I said. 'You can't tell friends from enemies.'

'Thanks for the vote of confidence, Nozomi.'

But even as he spoke, White knelt down and fiddled with the latches on the lid of the box. It opened with a gasp of air, revealing a mass of translucent protective sheeting wadded

around something very cold. After passing the blunderbuss to Risa, I reached in and lifted out the package, feeling its bulk.

'What is it?'

'An element of a new game,' said the other man, Black. 'Something called *Stroboscopic*.'

I carried the package to a workbench. 'Never heard of it.'

'It's hush-hush,' Black said. 'Company hopes to have it up and running in a few months. Rumour is it's unlike anything else in Tycho.'

I pulled back the last layer of wadding.

It was an animal packed in ice; some kind of hard-shelled arthropod; like a cross between a scorpion and a crab—all segmented exoskeletal plates and multi-jointed limbs terminating in various specialised and nasty-looking appendages. The dark carapace was mottled with patches of dirty white, sparkling with tiny reflections. Elsewhere it shone like polished turtleshell. There were ferocious mouth parts but nothing I recognised as an eye, or any kind or sensory organ at all.

'Looks delicious,' I said. 'What do I cook it with?'

'You don't eat it, Nozomi. You play it.' Black shifted nervously, as if wary of how much he could safely disclose. 'The game will feature a whole ecology of these things—dozens of other species; all kinds of predator-prey relationships.'

'Someone manufactures them?'

'Nah.' It was White speaking now. 'Icehammer found 'em somewhere outside the system, using the snatcher.'

'Might help if I knew where.'

'Tough titty. They never told us; we're just one of dozens of teams working on the game.'

I couldn't help but laugh. 'So you're saying, all I have to go on is one dead animal, which might have come from anywhere in the galaxy?'

'Yeah,' White said, his helmet nodding. 'Except it isn't dead.'

■ ■ ■

The mere fact that I'd seen the creature, of course, meant that I'd have an unfair advantage when it came to playing the game. It meant that I, Nozomi, one of the dozen or so best-known gamers in the system, would be cheating. But I could live with that. Though my initial rise to fame had been driven mainly by skill, it was years since I'd played a game without having already gained an unfair edge over the other competitors.

There were reasons.

I could remember a time in my childhood when the playing of games was not the highest pinnacle of our culture; simply one means by which rich immortals fought boredom. But that was before the IWP commenced the first in a long series of wars against the Halo Ideologues, those scattered communities waging dissent from the system's edge. The Inner Worlds Prefecture had turned steadily more totalitarian, as governments generally do in times of crisis. Stealthily, the games had been pushed towards greater prominence, and shady alliances had been forged between the IWP and the principal gaming houses. The games enthralled the public and diverted their attentions from the Halo wars. And—unlike the arts—they could not be used as vehicles for subversion. For gamers like myself it was a near-utopian state of affairs. We were pampered and courted by the houses and made immensely rich.

But—maybe because we'd been elevated to such loftiness—we also saw what was going on. And turning a blind eye was one of the few things I'd never been good at.

One day, five years ago, I was approached by the same individuals who'd brought the box to my yacht. Although they were officially working for Icehammer, they were also members of an underground movement with cells in all the gaming houses. Its lines of communication stretched out to the Ideologues themselves.

The movement was using the games against the IWP. They'd approach players like myself and offer to disclose material relating to games under development by Icehammer or other houses; material which would give the player an edge over their

rivals. The player in turn would siphon a percentage of their profit into the movement.

The creature in the box was merely the latest tip-off.

But I didn't know what to make of it, except that it had been snatched from somewhere in the galaxy. Wormhole manipulation offered instantaneous travel to the stars, but nothing larger than a beachball could make the trip. The snatcher was an automated probe which had retrieved biological specimens from thousands of planets. Icehammer operated its own snatcher, for obtaining material which could be incorporated into products.

This time, it seemed to have brought back a dud.

▪ ▫ ▪

'It just sits there and does nothing,' Risa said when the Icehammer employees had left, the thing resting on a chilled pallet in the sick bay.

'What kind of game can they possibly build around it?'

'Last player to die of boredom wins?'

'Possible. Or maybe you throw it? It's heavy enough, as though the damn thing is half-fossilised. Those white patches look like quartz, don't they?'

Maybe the beast wouldn't do *anything* until it was placed into the proper environment—perhaps because it needed olfactory or tactile cues to switch from dormancy.

'Black said the game was based on an ecology,' I said.

'Yeah, but how do you think such a game would work?' Risa said. 'An ecology's much too chaotic to build into a game.' Before she married me she'd been a prominent games designer for one of the other houses, so she knew what she was talking about. 'Do you know how disequilibriate your average ecology is?'

'Not even sure I can pronounce it.'

'Ecologies aren't kid's stuff. They're immensely complex—food webs, spectra of hierarchical connectedness … Screw up any one level, and the whole thing can collapse—unless you've

evolved the system into some kind of Gaian self-stabilizing regime, which is hard enough even when you're not trying to recreate an alien ecology, where there might be all sorts of unexpected emergent phenomena.'

'Maybe that's the point, though? A game of dexterity, like balancing spinning plates?'

Risa made the noise which told she was half acknowledging the probable truthfulness of my statement. 'They must constrain it in some way. Strip it down to the essentials, and then build in some mechanism whereby players can influence things.'

I nodded. I'd been unwilling to probe the creature too deeply until now, perhaps still suspicious of a trap—but I knew that if I didn't the little arthropod would drive me quietly insane. At the very least, I had to know whether it had anything resembling a brain—and if I got that far, I could begin to guess at the kinds of behavioural routines scripted into its synapses, especially if I could trace pathways to sensory organs. Maybe I was being optimistic, though. The thing didn't even have recognisable eyes, so it was anyone's guess as to how it assembled a mental model of its surroundings. And of course that told me something, though it wasn't particularly useful.

The creature had evolved somewhere dark.

▪ ▪ ▪

A month later, Icehammer began a teaser campaign for *Stroboscopic*. The premiere was to take place two months later in Tycho, but a handful of selected players would be invited to an exclusive preview a few weeks earlier, me among them.

I began to warm up to competition fitness.

Even with insider knowledge, no game was ever a walkover, and my contacts in the resistance movement would be disappointed if I didn't turn in a tidy profit. The trouble was I didn't know enough about the game to finesse the required skills; whether they were mental or physical or some combination of the two. Hedging my bets, I played as many different types

of game as possible in the timeframe, culminating in a race through the atmosphere of Jupiter piloting frail cloud-jammers. The game was one that demanded acute grasp of aerodynamic physics, coupled with sharp reflexes and a willingness to indulge in extreme personal risk.

It was during the last of the races that Angela Valdez misjudged a thermal and collapsed her foil. Valdez had been a friend of mine years ago, and though we'd since fallen into rivalry, we'd never lost our mutual respect. I attended her funeral on Europa with an acute sense of my own mortality. There, I met most of the other gamers in the system, including a youngish man called Zubek whose star was in the ascendant. He and Valdez had been lovers, I knew—just as I'd loved her years before I met Risa.

'I suppose you've heard of *Stroboscopic*?' he asked, sidling up to me after Valdez's ashes had been scattered on Europa's ice.

'Of course.'

'I presume you won't be playing, in that case.' Zubek smiled. 'I gather the game's going to be more than slightly challenging.'

'You think I'm not up to it?'

'Oh, you were good once, Nozomi—nobody'd dispute that.' He nodded to the smear of ash on the frost. 'But so was Angela. She was good enough to beat the hardest of games—until the day when she wasn't.'

I wanted to punch him. What stopped me was the thought that maybe he was right.

■ ■ ■

I was on my way back from the funeral when White called, using the secure channel to the yacht.

'What have you learnt about the package, Nozomi? I'm curious.'

'Not much,' I said, nibbling a fingernail. With my other hand I was toying with Risa's dreadlocks, her head resting on my chest. 'Other than the fact that the animal responds to light. The mottled patches on its carapace are a matrix of light-sensitive organs; silicon and quartz deposits. Silicon and silicon

oxides, doped with a few other metals. I think they work as organic semiconductors, converting light into electrical nerve impulses.'

I couldn't see White's face—it was obscured by a golden blur which more or less approximated the visor of his suit—but he tapped a finger against the blur, knowingly. 'That's all? A response to light? That's hardly going to give you a winning edge.'

'There's nothing simple about it. The light has to reach a certain threshold intensity before there's any activity at all.'

'And then it wakes up?'

'No. It moves for a few seconds, like a clockwork toy given a few turns of the key. Then it freezes up again, even if the light level remains constant. It needs a period of darkness before it shows another response to light.'

'How long?'

'Seventy seconds, more or less. I think it gets all the energy it needs during that one burst of light, then goes into hibernation until the next burst. Its chemistry must be optimised so highly that it simply can't process more rapid bursts.'

The gold ovoid of his face nodded. 'Maybe that ties in with the title of the game,' he said. '*Stroboscopic*.'

'You wouldn't care to hazard a guess as to what kind of evolutionary adaptation this might be?'

'I wish there was time for it, Nozomi. But I'm afraid that isn't why I called. There's trouble.'

'What sort?' Though I didn't really need to ask.

He paused, looking to one side as if nervous of being interrupted. 'Black's vanished. My guess is the goons got to him. They'll have unpicked his memory by now.'

'I'm sorry.'

'It may be hazardous for you to risk competition now that you're implicated.'

I let the words sink in, then shook my head. 'It's too late,' I said. 'I've already given them my word that I'll be there.'

Risa stirred. 'Too pig-headed to back down?'

'No,' I said. 'But on the other hand, I do have a reputation to uphold.'

■ ■ ■

As the premiere approached we learned what we could of the creature. It was happier in vacuum than air, although the latter did not seem to harm it provided it was kept cold. Maybe that had something to do with its silicon biochemistry. Silicon had never seemed like a likely rival to carbon as a basis for life, largely because silicon's higher valency denied its compounds the same long-term stability. But under extreme cold, silicon biochemistry might have the edge, or at least be an equally probable pathway for evolution. And with silicon came the possibility to exploit light itself as an energy source, with no clumsy intermediate molecular machinery like the rhodopsin molecule in the human retina.

But the creature lived in darkness.

I couldn't resolve this paradox. It needed light to energise itself—a flash of intense blue light, shading into the UV—and yet it hadn't evolved an organ as simple as the eye. The eye, I knew, had been invented at least 40 times during the evolution of life on Earth. Nature came up with the eye whenever there was the slightest use for it.

It got stranger.

There was something I called the secondary response—also triggered by exposure to light. Normally, shown a flash every 70-odd seconds, the animal would execute a few seemingly purposeful movements, each burst of locomotion co-ordinated with the previous one, implying that the creature kept some record of what it had been doing previously. But if we allowed it to settle into a stable pattern of movement bursts, the creature began to show richer behaviour. The probability of eliciting the secondary response rose to a maximum mid-way through the gap between normal bursts, roughly half a minute after the last, before smoothly diminishing. But at its peak, the creature was hypersensitised to any kind of ambient light at all, even if it was well below the threshold energy of the normal flash. If no light appeared during the time of hypersensitivity, nothing happened; the creature simply waited out the remaining half a

minute until the next scheduled flash. But if even a few hundred photons fell on its carapace, it would always do the same thing; thrashing its limbs violently for a few seconds, evidently drawing on some final reserve of energy which it saved for just this response.

I didn't have a clue why.

And I wasn't going to get one, either—at least not by studying the creature. One day we'd set it up in the autodoc analysis chamber as usual, and we'd locked it into the burst cycle, working in complete darkness apart from the regular pulses of light every minute and ten seconds. But we forgot to lash the animal down properly. A status light flashed on the autodoc console, signifying some routine health-monitoring function. It wasn't bright at all, but it happened just when the creature was hypersensitised. It thrashed its limbs wildly, making a noise like a box of chopsticks.

And hurled itself from the chamber, falling to the floor.

Even though it was dark, I saw something of its shattering, as it cleaved into a million pieces. It sparkled as it died.

'Oops,' Risa said.

■ ■ ■

The premiere soon arrived. Games took place all over the system, but the real epicentre was Tycho. The lunar crater had been domed, pressurised and infused with a luminous mass of habitats and biomes, all dedicated to the pursuit of pleasure through game. I'd visited the place dozens of times, of course—but even then, I'd experienced only a tiny fraction of what it had to offer. Now all I wanted to do was get in and out—and if *Stroboscopic* was the last game I ever played there, I didn't mind.

'Something's bothering you, Noz,' Risa said, as we took a monorail over the Icehammer zone. 'Ever since you came back from Valdez's funeral.'

'I spoke to Zubek.'

'Him?' She laughed. 'You've got more talent in your dick.'

'He suggested I should consider giving this one a miss.'

'He's just trying to rile you. Means you still scare him.' Then she leaned towards the window of our private cabin. 'There. The Arena.'

It was a matte-black geodesic ball about half a kilometre wide, carbuncled by ancillary buildings. Searchlights scissored the air above it, neon letters spelling out the name of the game, running around the ball's circumference.

Stroboscopic.

Thirty years ago the eponymous CEO of Icehammer Games had been a top-class player in his own right—until neural feedback incinerated most of his higher motor functions. Now Icehammer's frame was cradled within a powered exoskeleton, stencilled with luminous Chinese dragons. He greeted myself, the players and assorted hangers-on as we assembled in an atrium adjoining the Arena. After a short preliminary speech a huge screen was unveiled behind him. He stood aside and let the presentation roll.

A drab, wrinkled planet hove into view on the screen, lightly sprinkled with craters; one icecap poking into view.

'PSR-J2034+454A,' Icehammer said. 'The decidedly unpoetic name for a planet nearly 500 light-years from here. Utterly airless and barely larger than our moon, it shouldn't really be there at all. Less than ten million years ago its sun reached the end of its nuclear-burning life cycle and went supernova.' He clapped his hands together in emphasis; some trick of acoustics magnifying the clap concussively. 'Apart from a few comets, nothing else remains. The planet moves in total darkness, even starlight attenuated by the nebula of dust which embeds the system. Even the star it once drew life from has become a corpse.'

The star rose above one limb of the planet: a searing point of light, pulsing on and off like a beacon.

'A pulsar,' Icehammer said. 'A 15-kilometre ball of nuclear matter, sending out an intense beam of light as it rotates, four flashes a second; each no more than 13 hundredths of a second long. The pulsar has a wobble in its rotational axis, however, which means that the beam only crosses our line of sight once

every 72 seconds, and then only for a few seconds at a time.' Then he showed us how the pulsar beam swept across the surface of the planet, dousing it in intense, flickering light for a few instants, outlining every nuance of the planet's topography in eye-wrenching violet. Followed by utter darkness on the face of the world, for another 72 seconds.

'Now the really astonishing thing,' Icehammer said, 'is that something evolved to live on the planet, although only on the one face which it always turns to the star. A whole order of creatures, in fact, their biology tuned to exploit that regular flash of light. Now we believe that life on Earth originated in self-replicating structures in pyritic minerals, or certain kinds of clay. Eventually, this mineralogic life formed the scaffolding for the first form of carbon-based life, which—being more efficient and flexible—quickly usurped its predecessor. But perhaps that genetic takeover never happened here, stymied by the cold and the vacuum and the radiative effects of the star.' Now he showed us holo-images of the creatures themselves, rendered in the style of watercolours from a naturalist's fieldbook, annotated in handwritten Latin. Dozens of forms—including several radically different bodyplans and modes of locomotion—but everything was hard-shelled and a clear cousin to the animal we'd examined on the yacht. Some of the more obvious predators looked incredibly fearsome. 'They do all their living in bursts lasting a dozen seconds, punctuated by nearly a minute of total inactivity. Evidently some selection mechanism determined that a concentrated burst of activity is more useful than long, drawn-out mobility.'

Jumping, I thought. You couldn't jump in slow motion. Predators must have been the first creatures to evolve toward the burst strategy—and then grazers had been forced to follow suit.

'We've given them the collective term Strobelife—and their planet we've called Strobeworld, for obvious reasons.' Icehammer rubbed his palms together with a whine of actuating motors. 'Which, ladies and gentlemen, brings us rather neatly to the game itself. Shall we continue?'

'Get on with it you bastard,' I murmured. Next to me, Risa squeezed my hand and whispered something calming.

* * *

We were escorted up a sapphire staircase into a busy room packed with consoles and viewing stands. There was no direct view of the Arena itself, but screens hanging from the ceiling showed angles in various wavebands.

The Arena was a mockup of part of the surface of Strobeworld, simulated with astonishing precision: the correct rocky terrain alleviated only by tufts of colourless vacuum-tolerant 'vegetation,' gravity that was only a few percent from Strobeworld's own, and a magnetic field which simulated in strength and vector the ambient field at the point on Strobeworld from which the animals had been snatched. The roof of the dome was studded with lamps which would blaze for less than 13 hundredths of a second, once every 72 seconds, precisely mimicking the passage of the star's mercilessly bright beam.

The game itself—Level One, at least—would be played in rounds: single player against single player, or team against team. Each competitor would be allocated a fraction of the thousand-odd individual animals released into the Arena at the start—fifty/fifty in the absence of any handicapping. The sample would include animals from every ecological level, from grazers which fed on the flora, right up to the relatively scarce top predators, of which there were only a dozen basic variants. They had to eat, of course; light could provide their daily energy needs, but they'd still need to consume each other for growth and replication. Each competitor's animals would be labelled with infrared markers, capable of being picked up by Arena cams. It was the competitor's goal to ensure that their population of Strobeworld creatures outperformed the rival's, simply by staying alive longest. Computers would assess the fitness of each population after a round and the winner would be announced.

I watched a few initial heats before my turn.

Most of the animals were sufficiently far from each other—or huddled in herds—that during each movement burst they did little except shuffle around or move slightly more in one direction than another. But the animals which were near each other exhibited more interesting behaviour. Prey creatures—small, flat-bodied grazers or mid-level predators—would try and get away from the higher-level predators, which in turn would advance toward the grazers and subordinate predators. But then they'd come to a stop, perfectly motionless, their locations revealed only by the cams, since it was completely dark in the Arena.

Waiting.

It was harder than it looked—the dynamics of the ecosystem far subtler than I'd expected. Interfering at any level could have wildly unexpected consequences.

Risa would have loved it.

Soon it was my turn. I took my console after nodding briefly at my opponent; a rising player of moderate renown, but no real match for myself, even though neither of us had played *Stroboscopic* before.

We commenced play.

The Arena—initially empty—was populated by Strobelife via robot drones which dashed out from concealed hatches. The Strobelife was in stasis; no light flashes from the dome to trigger the life cycle; as stiff and sculptural as the animal we'd studied in the yacht. My console displayed a schematic overlay of the Arena, with 'my' animals designated by marker symbols. The screens showed the same relationships from different angles. Initial placement was pseudo-random; animals placed in lifelike groupings, but with distances between predator and prey, determined by algorithms compiled from real Strobeworld populations.

We were given five minutes to study the grouping and evolve a strategy before the first flash. Thereafter, the flashes would follow at 72-second intervals until the game's conclusion.

The five minutes slammed past before I'd examined less than a dozen possible opening gambits.

For a few flash cycles nothing much happened; too much distance between potential enemies. But after the fifth cycle some of the animals were within striking range of each other. Little local hotspots of carnage began to ensue; animals being dismembered or eaten in episodic bursts.

We began to influence the game. After each movement burst—during the minute or so of near-immobility—we were able to selectively reposition or withdraw our own or our opponent's animals from the Arena, according to a complex shifting value scheme. The immobile animals would be spirited away, or relocated, by the same robots which had placed them initially. When the next flash came, play would continue seamlessly.

All sorts of unanticipated things could happen.

Wipe out one predator and you might think that the animals it was preying on would thrive, or at least not be decimated so rapidly. But what often happened was that a second rival predator—until then contained in number—would invade the now unoccupied niche and become *more successful* than the animal which had been wiped out. If that new predator also pursued the prey animals of the other, then they might actually be worse off.

I began to grasp some of *Stroboscopic's* latent complexity. Maybe it was going to be a challenge after all.

I played and won four rounds out of five. No point deluding myself: at least two of my victories had been sheer luck, or had evolved from dynamics of the ecology which were just too labyrinthine to guess at. But I was impressed, and for the first time in years, I didn't feel as if I'd already exhausted every aspect of a game.

I was enjoying myself.

I waited for the other heats to cycle through, my own name only displaced from the top of the leader board when the last player had completed his series.

Zubek had beaten me.

'Bad luck,' he said, in the immediate aftermath, after we'd delivered our soundbytes. He slung an arm around my shoulder, matishly. 'I'm sorry what I said about you before, Nozomi.'

'Would you be apologizing now if I'd won?'

'But you didn't did you? Put up a good fight, I'll admit. Were you playing to your limit?' Zubek stopped a passing waiter and snatched two drinks from his tray, something fizzy, passing one to me. 'Listen, Nozomi. Either way, we won in style and trashed the rest.'

'Good. Can I go now? I'd like to speak to my wife.' And get the hell away from Tycho, I thought.

'Not so fast. I've got a proposition. Will you hear me out?'

I listened to what Zubek had to say. Then caught up with Risa a few minutes later and told her what he had outlined.

'You're not serious,' she said. 'He's playing a game with you, don't you realise?'

'Isn't that the point?'

Risa shook her head exasperatedly. 'Angela Valdez is dead. She died a good death, doing what she loved. Nothing the two of you can do now can make the slightest difference.'

'Zubek will make the challenge whether I like it or not.'

'But you don't have to agree.' Her voice was calm but her eyes promised tears. 'You know what the rumours said. That the next level was more dangerous than the first.'

'That'll make it all the more interesting, then.'

But she wasn't really listening to me, perhaps knowing that I'd already made my mind up.

Zubek and I arranged a press conference an hour later, sharing the same podium, microphones radiating out from our faces like the rifles of a firing squad; stroboscopic flashes of cameras prefiguring the game ahead. We explained our proposition: how we'd agreed between ourselves to another game; one that would be dedicated to the memory of Angela Valdez.

But that we'd be playing Level Two.

Icehammer took the podium during the wild applause and cheering that followed our announcement.

'This is extremely unwise,' he said, still stiffly clad in his mobility frame. 'Level Two is hardly tested yet; there are bound to be bugs in the system. It could be exceedingly dangerous.' Then he smiled and a palpable aura of relief swept through the

spectators. 'On the other hand, my shareholders would never forgive me if I forewent an opportunity for publicity like this.'

The cheers rose to a deafening crescendo.

Shortly afterwards I was strapped in to the console, with neuro-effectors crowning my skull, ready to light up my pain centre. The computer overseeing the game would allocate jolts of pain according to the losses suffered by my population of Strobelife. All in the mind, of course. But that wouldn't make the pain any less agonizing, and it wouldn't reduce the chances of my heart simply stopping at the shock of it all.

Zubek leant in and shook my hand.

'For Angela,' I said, and then watched as they strapped Zubek in the adjacent console, applying the neuro-effector.

It was hard. It wasn't just the pain. The game was made more difficult by deliberately limiting our overview of the Arena. I no longer saw my population in its entirety—the best I could do was hop my point of view from creature to creature, my visual field offering a simulation of the electrical-field environment sensed by each Strobelife animal; a snapshot only updated during Strobetime. When there was no movement, there was no electrical-field generation. Most of the time I was blind.

Most of the time I was screaming.

Yet somehow—when the computer assessed the fitness of the two populations—I was declared the winner over Zubek.

Lying in the couch, my body quivered, saliva water falling from my slack jaw. A moan filled the air, which it took me long moments to realise was my own attempt at vocalization. And then I saw something odd; something that shouldn't have happened at all.

Zubek hauled himself from his couch, not even sweating.

He didn't look like a man who'd just been through agony.

An unfamiliar face blocked my view of him. I knew who it was, just from his posture and the cadences of his speech.

'Yes, you're right. Zubek was never wired into the neuro-effector. He was working for us -persuading you to play Level Two.'

'White,' I slurred. 'You, isn't it?'

'The very man. Now, how would you like to see your wife alive?'

I reached for his collar, fingers grasping ineffectually at the fabric. 'Where's Risa?'

'In our care, I assure you. Now kindly follow me.'

He waited while I heaved myself from the enclosure of the couch, my legs threatening to turn to jelly beneath me.

'Oh, dear,' White said, wrinkling his nose. 'You've emptied your bladder, haven't you?'

'I'll empty your face if you don't shut up.'

My nervous system had just about recovered by the time we reached Icehammer's quarters, elsewhere in the building. But my belief system was still in ruins.

White was working for the IWP.

▪ ▪ ▪

Icehammer was lounging on a maroon settee, divested of his exoskeletal support system. Just as I was marvelling at how pitiable he looked, he jumped up and strode to me, extending a hand.

'Good to meet you, Nozomi.'

I nodded at the frame, racked on one wall next to an elaborate suit of armour. 'You don't need that thing?'

'Hell, no. Not in years. Good for publicity though—neural burn-out and all that.'

'It's a setup, isn't it?'

'How do you think it played?' Icehammer said.

'Black really was working for the movement,' I said, aware that I was compromising myself with each word, but also that it didn't matter. 'White wasn't. You were in hock to the IWP all along. You were the reason Black vanished.'

'Nothing personal, Nozomi,' White said. 'They got to my family, just as we've got to Risa.'

Icehammer took over: 'She's in our care now, Nozomi—quite unharmed, I assure you. But if you want to see her alive, I advise that you pay meticulous attention to my words.' While

he talked he brushed a hand over the tabard of the hanging suit of armour, leaving a greasy imprint on the black metal. 'You disappointed me. That a man of your talents should be reduced to cheating.'

'I didn't do it for myself.'

'You don't seriously imagine that the movement could possibly pose a threat to the IWP? Most of its cells have been infiltrated. Face it man, it was always an empty gesture.'

'Then where was the harm?'

Icehammer tried a smile but it looked fake. 'Obviously I'm not happy at your exploiting company secrets, even if you were good enough to keep them largely to yourself.'

'It's not as if I sold them on.'

'No, I'll credit you with discretion, if nothing else. But even if I thought killing you might be justified, there'd be grave difficulties with such a course of action. You're too well-known; I can't just make you disappear without attracting a lot of attention. And I can't expose you as a cheat without revealing the degree to which my organisation's security was breached. So I'm forced to another option—one that, on reflection, will serve the both of us rather well.'

'Which is?'

'I'll let Risa go, provided you agree to play the next level of the game.'

I thought about that for a few moments before answering. 'That's all? Why the blackmail?'

'Because no one in their right minds would play Level Three if they knew what was involved.' Icehammer toyed with the elegantly flared cuff of his bottle-green smoking jacket. 'The third level is exponentially more hazardous than the second. Of course, it will eventually draw competitors—but no one would consent to playing it until they'd attained total mastery of the lower levels. We don't expect that to happen for at least a year. You, on the other hand, flushed with success at beating Zubek, will rashly declare your desire to play Level Three. And in the process of doing so you will probably die, or at the very least be severely maimed.'

'I thought you said it would serve me well.'

'I meant your posthumous reputation.' Icehammer raised a finger. 'But don't imagine that the game will be rigged, either. It will completely fair, by the rules.'

Feeling sick to my stomach, I still managed a smile. 'I'll just have to cheat, then, won't I?'

■ ■ ■

A few minutes later I stood at the podium again, a full audience before me, and read a short prepared statement. There wasn't much to it, and as I hadn't written a word of it, I can't say that I injected any great enthusiasm into proceedings.

'I'm retiring,' I said, to the hushed silence in the atrium. 'This will be my last competition.'

Muted cheers. But they quickly died away.

'But I'm not finished yet. Today I played the first two levels of what I believe will be one of the most challenging and successful games in Tycho, for many years to come. I now intend to play the final level.'

Cheers followed again—but they were still a little fearful. I didn't blame them. What I was doing was insane.

Icehammer came out—back in his frame again—and made some half-hearted protestations, but the charade was even more theatrical than last time. Nothing could be better for publicity than my failing to complete the level—except possibly my death.

I tried not to think about that part.

'I admire your courage,' he said, turning to the audience. 'Give it up for Nozomi—he's a brave man!' Then he whispered in my ear: 'Maybe we'll auction your body parts.'

But I kept on smiling my best shit-eating smile, even as they wheeled in the same suit of armour that I'd seen hanging on Icehammer's wall.

■ ■ ■

I walked into the Arena, the armour's servo-assisted joints whirring with each step. The suit was heated and pressurised, of course—but the tiny air-circulator was almost silent, and the ease of walking meant that my own exertions were slight.

The Arena was empty of Strobelife now, brightly lit; dusty topsoil like lunar regolith, apart from the patches of flora. I walked to the spot which had been randomly assigned me, designated by a livid red circle.

Icehammer's words still rang in my ears. 'You don't even know what happens in Level Three, do you?'

'I'm sure you're going to enjoy telling me.'

'Level One is abstracted—the Arena is observed, but it might as well be taking place in a computer. Level Two's a little more visceral, as you're now well aware—but there's still no actual physical risk to the competitor. And of course even Level Two could be simulated. You must have asked yourself that question, Nozomi? Why create a real ecology of Strobelife creatures at all, if you're never going to enter it?'

That was when he had drawn my attention to the suit of armour. 'You'll wear this. It'll offer protection against the vacuum and the effects of the pulse, but don't delude yourself that the armour itself is much more than cosmetic.'

'I'm going into the Arena?'

'Where else? It's the logical progression. Now your viewpoint will be entirely limited to one participant in the game—yourself.'

'Get it over with.'

'You'll still have the ability to intervene in the ecology, just as before—the commands will be interpreted by your suit and transmitted to the controlling computer. The added complexity, of course, is that you'll have to structure your game around your own survival at each step.'

'And if—when—I win?'

'You'll be reunited with Risa, I promise. Free to go. All the rest. You can even sell your story, if you can find anyone who'll believe you.'

'Know a good ghostwriter?'

He'd winked at me then. 'Enjoy the game, Nozomi. I know I will.'

Now I stood on my designated spot and waited.

The lights went out.

I had a sense of rapid subliminal motion all around me. The drones were whisking out and positioning the inert Strobelife creatures in their initial formations. The process lasted a few seconds, performed in total silence. I could move, but only within the confines of the suit, which had now become rigid apart from my fingers.

Unguessable minutes passed.

Then the first stammering pulse came, bright as a nuclear explosion, even with the visor's shielding. My suit lost its rigidity, but for a moment I didn't dare move. On the faceplate's head-up display I could see that I was surrounded by Strobelife creatures, rendered according to their electrical field properties. There were grazers and predators and all the intermediates, and they all seemed to be moving in my direction.

And something was dreadfully wrong. *They were too big.*

I'd never asked myself whether the creature we'd examined on the yacht was an adult. Now I knew it wasn't.

The afterflash of the flash died from my vision, and as the seconds crawled by the creatures' movements became steadily more sluggish, until only the smallest of them were moving at all.

Then they too locked into immobility.

As did my suit, its own motors deactivating until triggered by the next flash.

I tried to hold the scene in my memory, recalling the large predator whose foreclaw might scythe within range of my suit, if he was able to lurch three or four steps closer to me during the next pulse. I'd have to move fast, when it came—and on the pulse after that, I'd have another two to contend with, nearing me on my left flank.

The flash came—intense and eye-hurting.

No shadows; almost everything washed out in the brilliance. Maybe that was why Strobelife had never evolved the eye: it

was too bright for contrast, offering no advantage over electrical field sensitivity.

The big predator—a cross between a tank, armadillo and lobster—came three steps closer and slammed his foreclaw into a wide arc that grazed my chest. The impact hit me like a bullet.

I fell backwards, into the dirt, knowing that I'd broken a rib or two.

The electrical field overlay dwindled to darkness. My suit seized into rigidity.

Think, Noz. Think.

My hand grasped something. I could still move my fingers, if nothing else. The gloves were the only articulated parts of the suit that weren't slaved to the pulse cycle.

I was holding something hard, rocklike. But it wasn't a rock. My fingers traced the line of a carapace; the pie-like fluting around the legs. It was a small grazer.

An idea formed in my mind. I thought of what Icehammer had said about the Strobeworld system; how there was nothing apart from the planet, the pulsar and a few comets.

Sooner or later, one of those comets would crash into the star. It might not happen very often, maybe only once every few years, but when it did it would be very bad indeed: a massive flare of X-rays as the comet was shredded by the gravitational field of the pulsar. It would be a pulse of energy far more intense than the normal flash of light; too energetic for the creatures to absorb.

Strobelife must have evolved a protection mechanism.

The onset of a major flare would be signalled by visible light, as the comet began to break up. A tiny glint at first, but harbinger of far worse to come. The creatures would be sensitised to burrow into the topdirt at the first sign of light which did not come at the expected time...

I'd already seen the reaction in action. It was what had driven the thrashing behaviour of our specimen, before it dropped to its death on the cabin floor. It had been trying to burrow; to bury itself in topdirt before the storm came.

The Arena wasn't Strobeworld, just a clever facsimile of it—and there was no longer any threat from an X-ray burst. But the evolved reflex would remain, hard-wired into every animal in the ecology.

All I had to do was trigger it.

The next flash came, like the brightest, quickest dawn imaginable. Ignoring the pain in my chest, I stood up—still holding the little grazer in my gloved hand.

But how could I trigger it? I'd need a source of light, albeit small, but I'd need to have it go off when I was completely immobile.

There was a way.

The predator lashed at me again, gouging into my leg. I began to topple, but forced myself to stay upright, if nothing else. Another gouge, painful this time, as if the leg armour was almost lost.

The electrical overlay faded again, and my suit froze into immobility. I began to count aloud in my head.

I'd remembered something. It had seemed completely insignificant at the time; a detail so trivial that I was barely conscious of committing it to memory. When the specimen had shattered, it had done so in complete darkness. And yet I'd seen it happen. I'd seen glints of light as it smashed into a million fragments.

And now I understood. The creature's quartz deposits were highly crystalline. And sometimes—when crystals are stressed—they release light; something called piezoluminescence. Not much; only the amount corresponding to the energy levels of electrons trapped deep within lattices –but I didn't need much, either. Not if I waited until the proper time, when the animals would be hypersensitised to that warning glint. I counted to 35, what I judged to be half way between the flash intervals. And then let my fingers relax.

The grazer dropped in silence toward the floor.

I didn't hear it shatter, not in vacuum. But in the total darkness in which I was immersed, I couldn't miss the sparkle of light.

I felt the ground rumble all around me. Half a minute later, when the next flash came from the ceiling, I looked around.

I was alone.

No creatures remained, apart from the corpses of those which had already died. Instead, there were a lot of rocky mounds, where even the largest of them had buried themselves under topdirt. Nothing moved, except for a few pathetic avalanches of disturbed dirt. And there they'd wait, I knew—for however long it was evolution had programmed them to sit out the X-ray flare.

Thanks to the specimen on the yacht, I happened to know exactly how long that time was. Slightly more than four and a half hours.

Grinning to myself, knowing that Nozomi had done it again—cheated and made it look like winner's luck—I began to stroll to safety, and to Risa.

The Receivers

With the ambulance sealed, and the Rutherford counter ticking nice and slowly, we cleared the hospital checkpoint and sped through the lanes to Sandhurst and Rye, then took the main road east to Walland Marsh and the junction at Brenzett to New Romney. It had been sunny when we departed, but as we neared the coast the sky turned leaden and overcast, with a silvery-grey mist keeping visibility to a mile or so. The coast road to Dungeness was a patchwork of repairs, with the newest craters either barricaded off or spanned by temporary metal plates. Ralph took it all in his stride, swerving the ambulance this way and that as if he had driven this road a thousand times, never once letting our speed drop under forty miles per hour. I held onto the dashboard as the ambulance lurched from side to side, creaking on its suspension. Ralph wasn't my normal driver and he took a bit of getting used to.

'Not getting seasick are you, Wally?' he asked, with a big smile.

'In an ambulance, sir?'

'It's just that you look a bit green!'

'I'm fine, sir—right as rain.'

'You're in safe hands; don't worry about that.'

Between jolts I asked: 'Been driving long, have you sir?'

'Twenty years or so, on and off. Started off a sergeant with the Special Constabulary Unit, then got myself signed up as a private with the London Field Ambulance.'

'In France were you, sir, before the retreat?'

'Steady, lad. If the Patriotic League catch you calling it that they'll have your guts for garters. It's the "consolidation", remember. Well, I was there—doing this job. So was Ravel—he was driving for the French, though, and we never met again.'

'Ravel, sir?'

'Old teacher of mine. A long time ago now.'

I didn't know much about Ralph, truth be told. Mister Vaughan Williams was his name, but no one ever called him anything other than Ralph, or sometimes 'Uncle Ralph'. He was a familiar face at Cranbrook, always organising a sing-song around the mess piano. They say he used to be a composer, and quite a good one, although I'd never heard of him. Most of the chaps liked him because he didn't have any airs and graces, even though you could tell he was from a good background. I guessed he was about sixty, but strong with it, like he could go on for a few more years without any trouble. There were plenty like him around: men who had signed up at the start of the war, when they were still in their early forties, and who had hung on ever since. Sometimes when I listened to Mister Chamberlain's speeches on the wireless I wondered if I'd still be around in twenty years, with an ambulance mate young enough to be my son.

We passed a gun emplacement that was still in use, two barrels sticking out at an angle, like a pair of fingers telling the Huns where to shove it, and then another one that had been bombed, so that it was just a broken shell, like a concrete-grey hat box that had been stepped on, and then we slowed for a checkpoint at a striped kiosk hemmed in with sandbags. The guards had boxes hung around their necks, stuffed with masks

in case the gas alarm went off. We were waved through without stopping, and then it was a clear dash along another mile or so of chalky road, with barbed wire on both sides. Out of the mist loomed a tall shape, the same grey colour as the gun emplacements, and a little further along the road was a similar shape and a third barely visible beyond that. From a distance they looked like tall grey tombstones sticking out of the land. Drawing nearer I saw that the structures were all alike, although I still had no idea of what they were. I couldn't see any doors or windows or gun slits, at least not from the angle we were approaching along.

'I don't suppose you have much idea what this is all about,' Ralph said. 'Never having been to Dungeness, after all. There are some other stations at Hythe and up the coast at Sunderland, but I don't imagine you've been there either.'

'No sir,' I admitted.

'What were you doing before you ended up with the Corps?'

'Artillery, sir. Anti-aircraft emplacement at Selsey.'

'Shoot down much?'

'A few spotter planes. One flying wing and a couple of zepellins. Then I got wounded in Sevenoaks.'

We passed the first shape. Because the road snaked a bit I was able to see that front of the object didn't have any doors or windows in it either, and no sign of gun slits. The main part was a big concrete bowl with a thick rim, tilted almost onto its side, so that it faced out to sea like a great curved ear. The bowl was easily fifty or sixty feet across, and its lower rim was about thirty feet off the ground. It was attached—or cast as part of—a heavy supporting wall with sloping sides, made of the same dreary-grey concrete. A windowless hut was positioned under the rim of the bowl, and rising from the roof of this hut was a metal tower that ended in a pole, sticking up so that it was in front of the middle part of the bowl.

'They've built them big now,' Ralph said. 'They were only about half the size when I was here last.'

'I've no idea what this is all about, sir.'

'Really, Wally?'

'Not a clue, sir.'

The ambulance slowed a little, and we passed a concrete plinth on which was mounted a curious object, resembling a flattened searchlight on a cradle that could be aimed in various directions. Two men were sitting on chairs attached to either side of the moving part of the cradle. In addition to their gas-masks they were wearing heavy black headphones. The men were gripping levers and steering wheels, and as we passed the cradle it tilted and rotated, making me think of a sleepy dog suddenly waking up to follow a wasp. A third man was standing next to them, with a portable telephone held to his ear.

'The name of the game's acoustic location,' Ralph said, before looking at me expectantly. 'I expect it's all as clear as crystal now?'

'Not really, sir. But you saying "acoustic"—I presume this has something to do with sound?'

'Very good. This is one of the main stations on the south coast. Those chaps we just passed are listening to the sky: that thing they're sitting on can pick up sounds from tens of miles away.'

I thought about that for a moments. 'Won't they have been deafened by us driving past?'

'No more than you'd be blinded by the sun if you were looking in the opposite direction. The receiver only amplifies the sounds coming into it along the direction it's pointed—nothing else matters. Those chaps steer it around until they pick up the drone of an incoming aeroplane, and then they nod it back and forth and side to side until they know they've got the strongest possible signal. Then a third chap reads off the elevation and directional angle and telephones that information straight to the coastal defense coordinator, who can then telephone instructions to the big guns or the Flying Corps.'

'When we were told to point our guns, sir, I always assumed it was down to spotters.'

'Which was undoubtedly what they wanted you to think. Not that the Hun didn't have their own stations, but we always

reckoned our coordinating system was superior. On a clear day, when the aeroplanes are within visual range, a spotter will always do a better job than the sound men—it's all a question of wavelengths, and the problem of building sound mirrors much bigger than the ones we already have. But when it's dark, or the weather's closed in like this, and the aircraft are a long way out, the fix provided by the sound stations gives us several minutes advance warning.'

The second concrete shape was now to our right. I noticed that the rim of the dish had a big chunk missing from it, with some concrete rubble lying on the ground under it—it was as if someone had taken a nibble from a biscuit. A man with white gloves and a gas mask was standing by the hut, directing us to continue driving.

'Looks like they took a direct hit,' I said. 'What do you suppose it was?'

Ralph steered for the third shape. 'Flying wing or long-range shells—doesn't make much difference now—the one's as bad as the other.'

'Are the concrete things the same as the one the men were steering?'

'Same general idea, just scaled up. The men call them sound mirrors—which is what they are, really—giant mirrors for collecting all that sound and concentrating it on a tiny spot just in front of the dish.'

'I don't see how you can steer one of those, sir, let alone nod it back and forth.'

'You can't, obviously. But you can move the pickup tube a little, which has a similar effect. The three of them are pointed in slightly different directions, to cover likely angles of approach. On a good day they'll pick up the bombers when they're still grouping over France.'

I couldn't see any shapes beyond the third one, so I assumed this was the limit of the Dungeness station. Beyond was a colourless tract of marshy scrub, as far as the mist would allow me to see. The final shape was even more badly damaged than the second one, with two chunks missing from it. A big piece

of concrete had even fallen onto the roof of the hut, though the structure appeared otherwise unharmed. A guard with gas mask box around his neck was ushering us to park alongside the hut, gesticulating with some urgency. He had a beetroot-red face and pock-marked cheeks, and he looked thoroughly fed-up with his lot.

Ralph brought the ambulance to a halt and the engine muttered itself into silence. Even through the airtight windows I could hear the slow rise and wail of a siren. The sirens went on for so long and so often that the only thing you could do in the end was pretend not to hear them. If you didn't, you'd go witless with worry.

We got out of the ambulance, collected our gas mask boxes from under the seats, and took two rolled-up stretchers from the rear compartment, carrying one apiece. We didn't know how many injured we would have to deal with, but it always paid to assume the worst: if we had to come back for more stretchers, we would.

'In there,' the beetroot-faced guard said, before stalking off in the general direction of the second shape. 'Be quick about it—after a shelling like this the flying wings usually come in.'

'How many injured?' Ralph called after him, but the man was already fixing his mask into place and appeared not to hear him. A seagull flew overhead and seemed to laugh at us.

'He's on an off-day,' I said, as we walked over to the hut.

'Your nerves wouldn't be fine fettle after spending long out here. The Hun have been bombing these listening stations to smithereens for years. Of course, we build 'em up again as soon as they're done—the thing about concrete is it's cheap and quick—but for some odd reason that only encourages them to keep coming back.'

'Pardon my asking, but how do you know all about this stuff, sir? Isn't it top secret?'

'It was, although it won't be for much longer. I don't doubt you've noticed those wireless towers that springing up everywhere?'

'Yes?' I answered cautiously, for I had seen the spindly constructions with my own eyes.

'Rumour mill says they're something that'll put these listening posts out of business in pretty sharp fashion. Pick up planes from hundreds of miles away, not tens. But until they've got 'em strung across the south coast, and wired togethered properly, these acoustic locators are all we've got.' Ralph put his hand on the door to the hut. 'To answer your first question … well, let's attend to the chaps in here first, shall we?'

The door to the hut was stiff with rubberised gas seals, but after a good tug it swung open easily enough. I followed him inside, not quite sure what to expect. Despite the seals, the hut was damp and cold, like a slimy old cave by the sea. Although there were no windows, there was an electric light in the ceiling, a bulb trapped behind a black metal cage, with a red one next to it that wasn't on. The lit bulb gave off a squalid brown glow which it was going to take my good eye a few moments to adjust to. There was some furniture inside: a grey metal desk with a black bakelite telephone, some chairs, some shelves with boxes and technical books on, and a lot of secret-looking radio equipment, most of which was also black and bakelite. And a man, sitting in one of the chairs at an angle to the desk, with a bandage around his head and another around his forearm, with the sleeve of his shirt rolled up. As we came in he tugged headphones from his head and put them down on the desk. He also closed a big green log book he had open on the desk, sliding it to the back of the desk. I'd only had a glimpse, but I'd seen loose papers stuffed into the log book, with lots of scratchy lines and blotches on them. I noticed there was a fountain pen on the desk, next to an inkstand.

The man was a good bit older than me, although I'd still have said he was ten years younger than Ralph—fiftyish, give or take. He still had a moustache, even though they weren't in fashion nowadays. He looked at us groggily, like he'd been half asleep until that moment, and waved us away in a good-natured kind of way. 'I'm all right, lads—just a few scratches, that's all. I told 'em it wasn't worth sending out for an ambulance.'

'We'll be the judges of that, won't we Wally?' Ralph said to me, as if we'd been working together for years.

I closed the door behind us.

The man stiffened in his chair and peered at the door with squinty eyes. 'Ralph? Good lord, it can't be, can it?'

'George?'

'One and the same, old boy!'

Ralph shook his head in delighted astonishment. 'Of all the places!'

A smile spread across the other man's face. 'I presume you found out I was working here?'

'Not at all!'

The man laughed. 'But it was you that put the word in for me!'

He had quite a posh way of speaking, like Ralph, but there was a bit of Yorkshire in there as well.

I placed my stretcher against the wall, coming to the conclusion I wouldn't be needing it, even though the man would still need to come back to Cranbrook.

'Well, yes,' Ralph said. 'But that was a while ago, wasn't it? You'll have to make allowances for me, I'm afraid—getting a bit doddery in my old age.' He put down his own stretcher and shook his head again, like he still couldn't quite believe what he was seeing. Slowly he moved to examine the seated man. 'Well, what happened? Did you get knocked down in here?'

'No,' our patient said. 'I was outside, coming down the ladder from the pickup tube, when some shells hit the dish. Got knocked off the ladder by a couple of splinters. Dashed my head on the side of the hut, and grazed my arm.'

Ralph gave him a severe look. 'You were outside during a shelling? You silly old fool, Butterworth.'

'The pickup tube needed adjustment. You know how it is—someone had to do it.'

'But not you, George—not you of all people. Well, better get you back to Cranbrook, I suppose. The fellow outside said we can expect flying wings. Don't expect you'll be too sorry to miss them, will you?'

'That's always how it happens,' the man said. 'Berthas take out our listening posts, then the planes can come in and pick their targets at leisure. You're right, Ralph—you chaps had best be moving. But you can leave me here—I'll mend.'

'Not a chance, old man. Can you stand up?'

'Honestly, I'm fine.'

'And we have a duty to look after you, so there's no point in arguing—right, Wally?'

'Right, sir,' I said.

Ralph offered him a hand and the seated man moved to stand up. Seeing that he didn't like having to put weight on his forearm, I wondered if his injury was a bit more serious than just a graze.

Just at the moment there was a distant *whump* that made itself felt more through the ground than the air. It was followed in quick succession by another, a little closer and sharper-sounding. Accompanying the sound of the bombs was a mournful droaning sound.

'That's your flying wings,' the man said, standing on his own two feet. 'They were quick about this time—give 'em credit. Probably got U-boats watching the station from the sea.'

I heard the boom of our own anti-aircraft guns—you can't mistake a seventy-five millimetre cannon for anything else, once you've worked on them. But something told me they were just taking pot-shots, lobbing shells into the sky in the vain hope of hitting one of those droaning, batlike horrors.

'Righty-ho,' said Ralph. 'Let's get you to the ambulance, shall we?'

I moved to the door and opened it again, just enough to admit a sliver of overcast daylight. At that moment another bomb fell, much closer this time: it was only twenty or thirty yards from the barbed wire on the other side of the road, and the blast launched a fan of sand and soil and rubble into the air. I felt like someone had whacked a cricket bat against the side of my head—for a moment my good ear went pop and I couldn't hear anything at all. Suddenly the distance to the ambulance looked immense. My hearing came back in a muffled away, but

even with that the siren managed to sound more insistent than before, as if it was telling us *now you'll believe me, won't you?*

I closed the door hard and looked back at the other two. 'I think it's a bit risky, sir—they seem to be concentrating the attack around here.'

'We'd best sit tight and hope it passes,' the man said. 'We'll be safe enough in here—the hut's a lot sturdier than it looks.'

'I hope you're right about that,' Ralph said, sitting down in the other chair. Then he looked at me. 'I don't suppose you have the faintest idea what's going on, Wally?'

'Not really, sir. I mean, I gather you two know each other, but beyond that…'

Ralph said: 'George and I go back a long way, although we haven't clapped eyes on each other in—what? Ten years, easily.'

'I should say,' George said.

'This is Wally Jenkins, by the way—he's a good sort, although I don't think he much cares for my driving.' Ralph leaned towards me with a knowing look in his eye, as if he was about to offer me a sweet. 'George and I were both interested in music, before the war. Very interested, I suppose you might say.'

'I heard you were a composer, sir,' I said.

'As was George here. Great things were expected of Butterworth.'

I racked my brains, but I didn't think I'd ever heard of anyone called George Butterworth. But then again I'd never heard of Ralph Vaughan Williams, and I'd heard it from the men at Cranbrook that he really *was* something, that people used to go to concerts of his music before the war.

Actually,' Ralph went on, 'there were three of us back then—George, me and dear old Gustav.'

'Isn't that a German name, sir?'

'Gussie was as english as you or I,' George said sternly.

'You did hear what they did to him, didn't you?' asked Ralph. 'Locked away by the Patriotic League for having latent

Germanic sympathies. They say he hung himself, but I've never been sure about that.'

'It was just a name, for heaven's sake. He'd stopped calling himself Von Holst. Wasn't that enough for them?'

'Nothing was ever good enough,' Ralph said.

▪ ▪ ▪

A brooding silence fell across the room, interrupted only by the occasional muffled explosion from somewhere outside. Ralph turned to me again and said: 'George and I were both members of the Folk Music Society. Now, I don't imagine that means very much to you now. But back then—this is thirty years ago, remember—George and I took to travelling around the country, recording songs. We were quite the double act. We had an Edison Bell disc phonograph—one of the very few in the country at the time. A brute of a machine, but at least it provided a talking point, a way of breaking the ice.' He nodded at the equipment on the shelves. 'Of course, it meant that we had some basic familiarity with recording apparatus—microphones, cables, that kind of thing.' He paused, and for the first time I saw something close to pain in his otherwise boyish face. 'In twenty-three I was shellshocked while on ambulance duties in the Salient. I was no good for battlefield work after that, so I was transferred here, to Dungeness. I was one of the operators, listening to the sounds picked up by these dishes, straining to hear the first faint rumble of an incoming aeroplane. In the end I was no good for it, and I had to go back to ambulance work, but I got to know some of the names in charge, and when I heard that dear old Butterworth had been shot…'

'I was wounded by a sniper,' George said. 'Not the first time, either—took one in the Somme in 'sixteen. That second was my ticket out of the war, though. But do you know the funny thing? I didn't want it. What was I going to do—go back to music, with all this still going on?' He shook his head, as if the very idea was as ludicrous as staging a regatta in the English Channel.

'I know how you felt,' said Ralph. 'I had so many things unfinished when this all began, and so many more things I wanted to do. *Lark Ascending*—that needed more work. That opera I keep talking about—I feel as if Falstaff's been standing at my shoulder for twenty years, urging me to get *Sir John* down on paper. And another symphony … I've had the skeleton of the *Pastoral* in my head ever since I was in the Somme, all those years ago.'

'The bugle player,' George said, nodding—he must have heard the story several times.

'They still won't understand it—they'll think it's all lambkins frolicking in meadows.'

'Give them time—they'll work it out eventually.'

'If I ever write it, old man. That's the clincher. Find myself a spare half hour here, a spare hour there, but if I'm not scribbling letters to Adeline—I'm writing out requisition forms for bandages or spare tyres, or organising raucous sing-songs around the mess piano. I *have* tried, but nothing good ever comes of it. Most of the time I can hardly hear the music in my head, let alone think about getting it down on paper.'

'How is Adeline now?' George asked.

'As well as can be expected, old man.'

After a silence George said: 'At least we're doing something useful. That's what I keep telling myself. Music was a pleasant dream, but now we've grown up and there are other things we have to do—proper, serious things, like listening for enemy aeroplanes, or driving ambulances.' Something seemed to snap in him then, as if he had been waiting a very long time to unburden himself. 'The damage is done, Ralph—even if you gave me a year off, to go and sit in some quiet country cottage and scribble, scribble, scribble, it wouldn't achieve a blessed bit of good. There's too much noise in my head, noise that won't just go away because I'm not in France, or not in earshot of the coastal guns. Why, there are times when I think the only place I can concentrate is *here*, in this cold little hut, listening to the noises across the sea.'

■ ■ ■

At that moment the red bulb, which had been dark when we came in, starting flashing on and off. There was a harsh buzzing sound from one of the black boxes on the shelf. Ralph looked at it worriedly.

'That's torn it,' George said. 'Gas detectors have gone off.'

'One of those bombs was carrying gas?' I asked.

'Mustard, phosgene or radium fragments—there's no way of telling from here.' George looked at me with narrowed eyes. 'Been in a gas attack, Wally?'

'Once, sir. But it's not really gas in the radium shells. It's little particles, but they get carried on the wind just as if they were a gas. They say there are parts of Woolwich no one will be able to live in for years, because that stuff can still get inside you.'

'Well, we're better off than they were in Woolwich,' George said, with a kind of steely determination that told me he was going to take charge. 'Now, the bad news is the seals on this hut aren't going to help us much if the gas drifts our way—they're old and perished, and we couldn't spend long in here anyway before the air got stale.'

'What about the ambulance, sir?' I asked.

Ralph shook his head slowly. 'No better, I'm afraid.'

'But the seals…'

'Aren't what they used to be. If we ran into a thick cloud we wouldn't have much of a chance.'

'That's not what they told us in Dorking, sir.'

'No, I don't doubt that. But they can't very well have ambulance drivers going around scared out of their wits, can they?'

'I don't suppose so,' I said, without much conviction.

'Never you mind about the ambulance anyway,' George said. 'There's an underground shelter on the other side of the compound, just before the first mirror—you'd have driven past it on your way in. That's safe, and it has its own air supply.'

'Will they still let us in?' Ralph asked.

'If we don't dilly-dally. I see you've both got your masks—that'll save us a jog back to the ambulance.' Still not quite steady on his feet, he went to one of the shelves and pulled down a regulation gas mask box. 'Now, you two go ahead of me—you'll find the shelter easily enough, and I won't be far behind you.'

'You can come with us,' Ralph said.

'I can't move very quickly—must have sprained my ankle when I fell off the ladder. Didn't notice until now, what with the head wound and everything.'

'We'll carry you,' I said. 'We can even take you in one of the stretchers—that'll be faster than all three of us hobbling along like a crab.' I opened my box and dragged out the gas mask. For some reason I didn't feel as grateful to be carrying it as I usually did. I was wondering if what they had told us in Dorking also applied to the gas masks.

'Open the box, George,' Ralph said quietly.

'You two go ahead,' George said, as if we hadn't heard him the last time.

'There's no mask in that box, is there?'

George had his back to us, like a boy who didn't want anyone to see his birthday present.

'The box,' Ralph said again, with a firmness I hadn't heard before.

'All right, it's empty,' George said, turning around slowly. He had the lid open, showing the box's bare interior. 'There was a mistake. I took the mask to the compound dressing station, then left it there by accident when I came back to the hut.'

'Why did you come back, instead of going straight to the shelter?' Ralph asked.

'Because I still wanted to listen, all right? The sound mirror still works, even with those chunks taken out of it. I felt I could still be some use.' He gestured helplessly at the headphones. 'I still wanted to listen,' he said again, more quietly this time.

'You hear it too,' Ralph said, wonderingly.

'Hear what?'

'The music. Don't pretend you don't know what I'm talking about, old man. You said this was the only place you could concentrate. You meant more than just that, didn't you? This is the only place where it comes back—the music—as if this war wasn't standing between us and everything we ever thought mattered. It's why I couldn't work here any longer, why I had to go back to the ambulance service.'

George stared at him without saying anything. So did I.

'I thought I was going insane at first—a delayed effect of the shellshock,' Ralph said. 'Well, perhaps I was—but that didn't make the music go away. If anything it just got stronger. It was like hearing someone hum a tune in the next room, a tune you almost recognised—you could pick out just enough of the melody for it to be maddening. I talked to some of the other chaps, thinking there must be some kind of interference on the wires … but when I got funny looks, I learned to keep my mouth shut.'

'What was the music like?' George asked.

'Beautiful beyond words—what I could hear of it. Enough to break your heart. Well, mine anyway. The *Pastoral*, how I always meant it would sound. I could hear it, as if it was being played to me by an orchestra, as if I was just a listener in the audience. But not just the *Pastoral* … there was also the *London*, done differently—I always did mean to take another stab at that one, you know … *Lark* … and music I don't even recall intending to write, but which seems to have *me* all over it.'

'It's our music,' George said.

'I know, old man. That's what I've been hardly daring to admit to myself, all this time. It's all the music we would have made, if this war wasn't in the way. I think we *did* write that music, in some weird way, and it's making itself known to us here. No one else hears it, of course. But you and I … I think we're like antenna, or microphones, ourselves. I hear the music I would have made, and I suppose you hear your own tunes.'

'I hope they're mine. I couldn't bear the idea of them being yours.'

'That good, eh?'

'Lovely. Lovely and sad and stirring ... everything I ever wanted music to be.' He closed his eyes for a moment. 'But it's so terribly *quiet*. Some days I don't hear it at all. Today it seemed to be coming through stronger than most. If I could only get it down...'

'You mean on paper, sir?' Ralph gave me a blank look and I said: 'It's just that when we came in, I thought I saw some papers in Mister Butterworth's log book. I didn't make much of it the time, but now that I know about the music, I wondered if you'd been trying to write down the music.'

George gave a short, weary laugh. 'You don't miss much, Wally: I thought I was much too quick for you.'

'Can I see?' Ralph asked.

George slid the log book across the desk and opened it again, revealing the loose papers inside. He passed one of them to Ralph. It was a pink form with typewriting on one side. 'Never was much good at transcription,' he said. 'You'd be faster and more accurate. But then it wouldn't be my music you'd be hearing, would it?'

Ralph tapped his finger along the music, making a kind of low, tum-te-tum noise. He wasn't exactly singing along with it, but I could tell he was imagining it properly, just as if a band was playing in his head, with all the right instruments. 'Well, it's got the Butterworth stamp,' he said eventually. 'No doubt about that.'

George leaned forward a little. 'What do you think?'

'I think I'd like to hear the rest of it. This is obviously just a fragment, a few bars of a much larger work.'

'I can only write what I hear. Like you say, it's as if a chap next door is humming a tune. You can't dictate which tune he'll hum, you just have to go along with him and hope for the best.' George paused and looked serious. 'Did you ever write any of it down, old boy?'

'Transcribe it, you mean?' Ralph shook his head slowly. 'I was too scared to. Scared that if I write it down the music might stop. And that if I put that music down on paper, and

convinced myself that it really was something I'd come up with, I'd have to admit to myself that I was going quite insane.'

'Or that the music's real,' George said quietly.

'Now you know why I stopped working here, of course. No use to man nor boy if all I kept hearing was music, instead of aeroplanes.'

'I hear the aeroplanes as well. It's just that the music comes through when they're not there.' He turned to me sharply. 'Well, Wally: what do you make of it? Are we both for the nuthouse?'

'I don't think so sir,' I said.

But in truth I wasn't sure. George might have been younger than Ralph, but they were still old men, and they had both had their share of unpleasant experiences in the war. So had I, in a smaller way, and I still felt that I had my marbles ... but what kind of condition would my head be in twenty or thirty years from now, if the war just kept on the way it had?

Perhaps I would start hearing secret music as well.

'Wally,' Ralph said to me. 'I want you to listen very carefully. We're Royal Army Medical Corps men. We have a patient here, and a duty to protect him. Understood?'

I nodded earnestly, just as if I was still taking ambulance classes in Dorking. 'What are we going to do, sir?'

'You're going to take him to the shelter. George will use my gas mask, and you will use your own.'

'And you sir?'

'I shall wait here, until you can return with a second mask.'

'But the seals, sir...'

'Will hold for now. Be sharp about it—we don't have all afternoon.'

'No,' George said, more to me than Ralph. 'He isn't staying here. It's his gas mask, not mine—he should be the one using it.'

'And you're thirteen years younger than me, old boy. One of these days, for better or for worse, this war is going to be over. When that day comes I'm not going to be much good for writing music—I'm worn out as it is. But you've still got some life in you.'

'No one'll be writing much music if the Hun take over.'

'We thought the world of German music before all this started—Bach, Brahms, Wagner—they all meant so much to me. It seems funny to start hating all that now.' Ralph nodded at the still-flashing red light. 'But we can discuss this later—provided we keep our voices down. In the meantime, Wally's going to take you to the shelter. Then he'll come back for me and we can all sit around and joke about our little adventure.'

'I'm not sure about this sir,' I said.

'RAMC, lad. Show some spine.'

'Sir,' I said, swallowing hard. Then I turned my attention to George. 'I don't think there's much point arguing, sir. Perhaps it isn't such a bad plan after all, anyway. I can sprint back with another gas mask pretty sharpish.'

'Take the mask,' Ralph said.

Something passed between them then, some unspoken understanding that was not for me to interpret. Time weighed heavy and then George took the mask. He said nothing, just fitted it over his head without a word. I put on my own mask, peering at the world through the grubby little windows of the mica eyepieces.

We left the hut, closing the door quickly behind us. George could not run, but with my bad knee I was not much better. We started making for the first dish, with the promise of the shelter beyond it. Through the mask all the colours looked as yellowy as an old photograph, but George looked back at me and pointed out something, a band of darker yellow lying in the air across our path. Phosgene, I thought: that was the yellow one, not mustard gas. Phosgene didn't get you straight away, but if they mixed it with chlorine it was a lot quicker. I pressed the mask tighter against my face, as if that was going to make any difference.

It took an age to reach the shelter, with the distance between the sound mirrors seeming to stretch out cruelly. Just when it began to cross my mind that perhaps the shelter did not exist, that it was some figment of George's concussion-damaged imagination, I saw the low concrete entrance, the steps leading

down to a metal door that was still partly open. A masked guard, who might have been the same man Ralph and I had spoken to earlier, was urging us down the steps.

When the door was tight behind me, I whipped off my mask and said: 'Give me yours, George—it'll do for Ralph.'

George nodded and dragged the mask from his face, which was slick with sweat and dirt where the rubber had been pressing against his skin. 'Good man, Wally,' he said, between breaths 'You're a brave sort.'

But the guard would not let me leave the shelter. The red light above the door was telling him that the gas concentration was now too high to risk exposure, even with a mask.

'I have to go!' I said, shouting at him.

The guard shook his head. No arguing from me was going to get him to change his mind. We had been lucky to make it before they locked the shelter from the inside.

■ ■ ■

Looking back on it now, I'm sure Ralph knew exactly what would happen when I got to the shelter—either that, or he had a pretty shrewd idea. What he said to George kept ringing in my head—about how the younger man would still be able to get some of that music down, when the war was over. It was like one runner passing the baton to the other. I don't think he would have said that if he expected me to come back with another mask.

Because there was no wind that day, the gas alert remained high until the middle of the evening. When it was safe I went out with two masks and a torch, back to the hut, just in case there was still a chance for Ralph. But when I got the hut, the door was open and the room empty. Everything was neat and tidy—the box back on the shelf, the headphones back on their hook, the chair set back under the desk.

We didn't find him until morning.

He was sitting in one of the seats attached to the steerable locator we had driven past on our way in. He must have

known what to do because he had the headphones on and one of his hands was still on the wheel that adjusted the angle of the receiver. The other chair was empty. The flattened disk was aimed out to sea, out to France, a few degrees above the horizon.

The thing was, they never did tell me *what* killed him—whether it was the gas, or him being out all night in the cold, or whether he just grew tired and decided that was enough war for one lifetime. But what I do know is what I saw on his face when I found him. He had his eyes closed, and there wasn't anything in his expression that said he'd been in pain when the end came.

Now, I know people'll tell you that faces relax when people die, that everyone ends up looking calm and peaceful, and as an ambulance man I won't deny it. But this was something different. This was the face of a man listening to something very far away, something he had to really concentrate on, and not minding what he heard.

It was only later that we found the thing he had in his hand, the little piece of pink paper, folded like an envelope.

■ ■ ■

Four days later I was able to visit George. He was in bed in one of the wards at Cranbrook. There were about five other men in the ward, most of them awake. George was looking better than when I'd last seen him, all messy and bandaged. He still had bandages on his head and arm, but they were much cleaner and neater now. His hair was combed and his moustache looked like it had been trimmed.

'I'm glad you're still here, sir,' I said. 'I was frightened you'd be transferred back to Dungeness before I could get to see you. I'm afraid we've been a bit stretched the last few days.' I had to raise my voice because Mister Chamberlain was on the wireless in the corner of the ward, doing one of his encouraging, 'one last push' speeches.

'Pull the screens,' George said.

I did as I was told and sat down on the little stool next to his bed. The screens muffled some of Mister Chamberlain's speech, but every now and then his voice seemed to push through the green curtains as if he was trying to reach me personally, the way a teacher might raise his voice to rouse a day-dreaming boy at the back of the class.

'You're looking better, sir,' I offered.

'Nothing time won't heal.' He touched the side of his head with his good arm, the one that wasn't bandaged. 'I'll be up on my feet in a week or two, then I'll get my new posting. No use for me in Dungeness anymore, though—my hearing's no longer tip-top.'

'Won't it get better?'

'Perhaps, but that won't make much difference in the long run. They're getting rid of the sound mirrors. We always knew it was coming, but we thought we'd be good for another year. It turns out that the new system won't need men listening on headphones. The new breed will stare at little screens, watching dots move around.'

Mister Chamberlain said something about 'over by Christmas', followed by 'looking forward to a bright and prosperous Nineteen Thirty-Six.'

'And the music, sir?' I asked.

'There won't be any more music. Wherever it came from, whatever it was that let us hear it … it's gone now, or it will be gone by the time they tear down the mirrors. Even if it's still coming through to Dungeness, there won't be anyone there who can hear it now. Best to forget about it now, Wally. I've no intention of speaking about it again, and with Ralph gone that only leaves you. If you've an ounce of common sense—and I think you've rather more than an ounce—you'll say no more of this matter, to any living soul.'

'I'm sorry about Mister Vaughan Williams, sir.' I'd called him Ralph all the time I had known him, but sitting next to George I found myself coming over all formal. 'He was always kind to me, sir, when we were doing our ambulance duties. Always treated me like an equal.'

'He was a good man, no doubt about that.' George said, nodding to himself. Then he patted the bedsheet. 'Well, thank you for coming to visit, Wally. Knowing how busy you ambulance chaps are, I appreciate the gesture.'

'There's another reason I came, sir. I mean, I wanted to see that you were all right. But I had something for you as well.' I reached into my pocket and withdrew the folded piece of pink paper. 'We found this on him. It's one of your transcriptions, I think.'

'Let me see.' George took the paper and opened it carefully. His eyes scanned the markings he had made on it, the scratchy lines of the staves and the little tadpole shapes of the notes. There were lots of blotches and crossings-out. 'Did you see him do this?' he asked, looking at me over the edge of the paper.

'See him do what, sir?'

'He's corrected me! You wouldn't have noticed, but not all of those marks were made by me! The beggar must have sat down and taken the time to correct *my* transcription of *my* music!'

'When we were on our way to the shelter, sir?'

'Must have been, I suppose.' George shook his head in what I took to be a mixture of dismay and amusement. 'The absolute bare-faced affrontery!' Then he laughed. 'He's right, though—that's the galling thing. He's bloody well right!'

'I thought you ought to have it, sir.'

He began to fold the paper away. 'That's very kind of you, Wally. It means a lot to me.'

'There is something else, sir. When we found that sheet of paper on him, he'd folded something into it.' I reached into my pocket again and drew out a small brass key. 'I don't know what to make of this, sir. But I've a personal effects locker, and my key looks very similar. I think this might be the one to his locker.' I felt like I was about to start stammering. 'The thing is, there *is* a locker, and no one's managed to get into it until now.'

I passed the key to George.

'Why would he put his key in that piece of paper? Anything personal, he'd have wanted it sent on to Adeline.'

'He must have known what he was doing, sir. You being a composer and all that … I just wondered…' I swallowed hard. 'Sir, if there was music in that locker, he'd want you to see it first, wouldn't he?'

'What makes you think there might be music, Wally?'

'When you asked him if he'd written any of it down, he said he hadn't.'

'But you wonder if he was telling a fib.'

'It's a possibility, sir.'

'It is indeed.' George's hand closed slowly on the key. 'I wonder if him correcting my music was a sign, you know? A way of giving me permission to correct his, if I saw something in it I didn't think was right? Or at the very least giving me permission to tidy it up, to put it into some kind of order?'

'I don't know, sir. I suppose the only way of knowing would be to open the locker and see what's in it.'

'And you haven't already done so?'

'I thought that would be a bit impertinent, sir, as he'd clearly meant for you to open it.'

George passed the key back to me. 'I can't wait. Go and see what's inside now, will you? I assume they'll let you?'

'I was his ambulance mate, sir. They'll let me anywhere.'

'Then go to the locker. Open it and find his music, and bring it to me. But if you don't find anything … I should rather you didn't come back. I wouldn't like to see your face come through that door and then be disappointed. If there's something in there I must have, correspondence or suchlike, then you can have it sent to my bedside by one of the orderlies.'

My hand closed on the key. 'I hope I'm not wrong about this, sir.'

'Me too,' George said, softly. 'Me too.'

'I won't be long.'

I opened the curtain. The key was hard against my palm, digging into the flesh. Mister Chamberlain was still going on, but no one seemed to be listening now. They had heard it all before.

Byrd Land Six

Villiers said nothing during the drive to the target area. He just sat by her in the cab, clean-shaven, nodding to the elliptic movements of Vaughan Williams's *Sinfonia Antarctica.*

'Ice is thin here,' she said. 'Sure you want to land a cargo plane on this stuff? Might go straight through.'

He just looked at her, tight-lipped, reeking of something expensive and Orbital. Eventually his attaché case chimed and he motioned her to kill the Cat's diesel.

'Excellent, Dr Everard,' he said. 'They should be here any moment.' Everard peered into the colourless Antarctic sky. She'd expected to see the lights of a Company plane, but the only visible thing was the crescent moon, its shadowed part aglitter with industry. She could have been there, making her name in one of the Helium 3 facilities, when instead she was here on the frozen shore of the Getz ice shelf, tending one of the Company's last Earthside concerns, patiently watching her career slide down the pan.

'They're here,' Villiers said, nixing the music, nodding casually toward a dark smear half a klick away.

It enlarged—fissures racing from it, something monolithic rising from the epicentre. Driving the Cat across kilometres of white nothing, it was easy to forget the presence of ocean not many metres below. Water was seething in black anger around the rising monolith, fractures still creeping toward the Cat.

'Relax,' Villiers said. 'It's one of ours.' Company men emerged from the conning tower, standing in orange parkas on the rubberized foredeck. They folded bridges to the surrounding ice. Villiers zipped up and exited, cold blasting into the cab.

Everard took the dash radio. 'Weber?'

'You have my divided attention. What's going down?'

'Villiers is meeting his people.' Everard heard a commentator's voice rising, followed by the static-like roar of stadium euphoria. 'He tell you what this is about, by any chance? I mean, figured since you two were all alone out there…' He chomped on something.

'Well, maybe you managed to loosen his tongue.'

'Stick to football, big guy.' She hung up the handset.

A week ago life had been simple, albeit dull: keep Byrd Land Six running, keep her dozen people at least clinically sane, take core samples from the ice; delude herself she might still be one of the Company's less expendable assets. It was, as they said, a job—and there were certainly more hellish existences imaginable. Why, she wondered, had that not been obvious then?

Villiers came first, directives placing him in command of all BL6 activities. Most of her crew were relocated, leaving only Weber, Cookie, Navarre and herself. Everard took this stoically, admittedly intrigued. Then Villiers's team arrived from Punta Arenas, unpacking crates from ski-equipped Antonovs, heavy stuff which they smuggled underground into the vehicle pool. She complained that her cardkey no longer accessed the pool, but Villiers told her this was Company business and she'd better adjust to it fast. Then he spread his palms conciliatorily and said that, hey, if she was interested, if she really wanted to get

close to high-level Company activity —well, he did need someone to drive a Cat out onto the shelf tomorrow.

So here they were. Villiers hadn't said much, but she had learnt one thing. Judging by the submarine, he hadn't been exaggerating about the operation's scale.

'Open up.' She let him in, noticing the bulky yellow thing that hung from one gloved hand. Like a thermos flask with an LCD panel.

'Drive,' he said. The submarine sank under the pulverised ice. She gunned the four-track south, back toward solid ground, waiting minutes before risking a question.

'What's in the coffee-pot?'

'Mars,' he said, then slumped into his seat, eyes closed.

▪ ▪ ▪

She cornered him leaving what had been her office, after the remark had gnawed at her curiosity.

'Why Mars?' she said. 'We don't have anyone there, least as far as I know.'

'Of course not,' Villiers said, edging her outside. 'People died going to Mars. Hell, people even died on Mars. The Company has no concern there.'

'Why mention it?'

He barged past, but she followed him through the corridors which led to the vehicle pool. BL6 seemed larger now her people had gone. She figured two or three of Villiers's underlings remained, but they spent all their time in the pool. Villiers reached the door and carded the slot. Through the crack Everard saw operating theatre lights, white-coat activity and too much equipment to take in immediately. Something like a boiler in the middle of the room, surrounded by consoles and apparatus. Also something like a claw-equipped tank, a kind of high-tech multi-gym by it.

'When I asked you what was in that thing…'

'The yellow box?' Villiers shrugged, blocking her view into the pool. Fresh nicks marred his chin, Everard wondering how

many hours of each week, how many days of each year, he spent maintaining that profile.

'Listen, Everard,' he said, sighing. 'Guess you've seen too much already. Have to give you retroactive clearance; that or send you somewhere more remote than this shithole. So I guess I can tell you what was in the box.'

'Magnanimous of you.'

'It's half of a Franson pair.' The door was closing, Villiers already through the gap.

'Is that meant to mean something to me?'

He smiled. 'No.'

■ ■ ■

Villiers, Everard thought, wasn't as cool as he imagined. He made mistakes—like not locking her office. She clicked the light on.

Most of the desk drawers contained office junk, but the lowest held an unfamiliar plastic envelope stuffed with Company documents. Dared she remove it? So far, all she'd done was blunder into her office. Reading material elevated it to an entirely different level. So be it.

The dossier disgorged half a dozen documents, embossed with no-bullshit security flashes. She scanned them, hoping to glean the gist of Villiers's plan. The first few concerned teleoperation; crammed with technical diagrams and jargon. Big business for the Company—humans could control submersibles from the safety of ships, or mining robots from the safety of lunar bases; be made to feel physically present where it would have been dangerous or uneconomical to place a person.

Big deal, Everard thought.

The next concerned the Company's lunar activities, full of protocols and standards adhered to by the Helium 3 mining facilities. Sensitive, but almost calculatedly boring.

She was reaching for the last two documents when the light died. Her heart caught—then, almost immediately, the light returned to normality.

She phoned Weber. 'Don't do that again.'

'Off my back,' he said. 'Something just took a chunk from our energy budget. Try blaming your new pals downstairs.'

'You probably think they told me what they're up to,' Everard said. 'But I don't know any more than you.'

She had no trouble visualising Weber's for sure look, but could hardly blame him. 'Listen,' he said. 'Why are you whispering? You calling from somewhere you shouldn't?'

'As if.'

She hung up and stared at the last two documents blankly, waiting for the reams of squiggles to form into sensible phrases. Page after page of equations; acres of mathematics occasionally signposted by the odd, lonely word or phrase. She recognised the word Franson, remembering what Villiers had said about the thing in the box … but no mention of Mars.

■ ■ ■

Everard halted her skidoo a kilometre out, by a tripod topped with rotating cups.

Shitwork, taking her mind off Villiers. The anemometers failed regularly; iced bearings or electronics glitches. This looked like the latter, the cups clean and rotating when she fingered them. The windmills further out had been registering 30 klick winds, yet according to this unit there was barely a breeze.

Everard stowed the 'tronics box on the skidoo, then connected a spare. Admittedly the air really was still, but she ran tests to ensure the mill was healthy and pulsing its data back to BL6.

She climbed back aboard the skidoo.

The stillness, she thought, was itself unusual. For days a niner had been scurrying in from the Getz ice sheets, but now a repose had settled over the straits. Everard felt as if she was on a film set; the white infinity only a backdrop, someone having forgotten to turn on the wind machine.

She opened a window in her goggles. The CNN Personal reporter spoke from the belching scene of a tropical rail disaster,

slanting the news toward her preferences. 'Something else that might interest you, Dr Everard...'

She channel-hopped, stumbling on a Company commercial; slick material showing lunar workers teleoperating drones via VR hookups. The multi-gym in the vehicle pool was, she realised, the couch on which the operator lay, goggled-up and linked to the distant machine.

Then the promotion segued into something stranger; futuristic guff showing the Company on Mars. Villiers's remark aside, she knew how unlikely that was. It was too expensive to keep people on Mars, autonomous robots too stupid to work there unassisted. You couldn't teleoperate them, either, since radio signals took too long to reach Mars, the simplest task requiring tens of minutes.

But maybe the Company had other ideas. Maybe Villiers's technology was designed to make Mars exploitable, in which case his remark about the box made a warped sense. She was thinking it over when Weber cut in.

'Still miffed about the power drain?' she asked. 'More serious,' he said. 'Transmitter's on the fritz again.'

'Terrific,' she said. The stillness closed in on her, as if the unending dusk was the inside of stained bell-jar. 'You know, Weber, sooner or later this run of good luck is going to peter out on us.'

'Is that, you know, sarcasm?'

Everard scoped the antenna as she returned, unsurprised to see it superficially intact. The rig pulled in CNN and transmitted Weber's voice out to the skidoo, so there could hardly have been anything majorly wrong with it. Some sub-element might have blown, or the sender dish might have slipped off-beam.. Trouble was, those were exactly the things Weber would have checked.

'Too much of a coincidence,' he said, meeting her in the secondary vehicle pool. Weber's beard made him as inscrutable as all the other technicians.

'What?'

'Isn't it just a little strange that they turn on something down there and a few hours later we start having problems getting a signal out? Gotta be high-end interference from their gear.'

'Weber, we can't immediately assume its Villiers's fault.' Wondering as she spoke who she was really kidding. He was right, of course—realistically, there just had to be a connection. So what exactly could she do about it? Pinch her nose against Villiers's aftershave and confront him about it? Might as well stroll into the CEO's office and shit on his desk, the good it would do her career.

'Let's check it one more time.'

'And then you can tell HQ it isn't our problem.'

'Maybe, Weber,' she said. 'Maybe.'

■ ■ ■

The rig was clean.

'What'd I tell you?' Weber said. 'Either something downstairs is jamming it, or McMurdo aren't reading it properly.' He fixed her with narrowed, snow-squint eyes. 'To be honest, I can't find any interference. Pity. Leastways we could point a finger then.'

'Listen,' Everard said. 'I'll drive out to the five-kilometre mark then take a signal reading. That way we'll know if there's a problem at our end.'

'Cookie's outside,' Weber said. 'Send him out to five kay instead.'

'Forget it,' she said. 'By the time I'd explained...anyway, how was he outside without my say-so?'

'We need it?'

'Since now, yes.'

Weber sighed, scratching his beard. Aside from being the chef, Cookie was also a Company meteorologist. The Russian took a special interest in monitoring the windmills—it was Cookie who had told her about the unit she had fixed. 'Didn't want to bother you, but after you left a whole bunch of mills

began playing up. Way he said it, the mills two or three klicks out were sniffing gale force, but the closer ones were all dead.'

'Dead?'

'Like there was no wind at all.'

'Wait,' Everard said. 'I was out there and there really wasn't any wind.'

She raised a hand in mock despair, though perhaps not as mock as she might have wished. 'Call him up, will you? I'm going to check that signal.'

* * *

The hush remained. It made working easier, but Everard didn't like it. How could gales blow a few kilometres out, nothing near BL6? More than anything it was creepy.

She passed the mill she had fixed earlier, cups idling to and fro. She kept on, settling into the rhythmic motion of the skidoo, bouncing across snake-ridges in the ice, engine a hornet rasp goading her on. At the two-kay mark something loomed ahead; at first just a glint.

A mill, leaning oddly. She doused the motor, crunching to a halt a few meters from the mill. She stepped off, noticing the snow's glisteningly smooth texture. Sometimes, wind stippled ice and snow into unbelievable textures, magically different to anything in her experience. She doubted there was even a name for this pearly snow.

The mill was carapaced in wind-smoothed ice. It looked more like an ice-sculpture of a mill than the real thing; partially melted. No chance repairing it here—she needed to get it onto the skidoo and back to BL6. She got a good stance and tried tugging the tripod free, but it was too slippery. Then she took a chisel from the tool kit, intending to chip away the ice. But as soon as she started jagged flakes came off in her hands.

She held one of them before her eyes, knowing something was wrong. It was silvery, yet translucent—not quite ice, not quite metal.

She chiselled deeper, and the windmill crumbled away completely, collapsing in shards.

'Weber?' she called. 'You read me?'

'Loud and clear. You sound … bothered.'

'Weber, something strange is happening here. I've found one of the mills. It's…' She paused. What was she going to tell him? That the thing had turned into an ice replica of itself? 'Well, you'd better see for yourself.'

'Bring it back,' Weber said. 'We'll take a look at it. By the way; no luck reaching Cookie. You seen him?'

'No,' she said absently, spooked by the mill. 'No sign of him.'

'Well,' Weber said. 'Stay frosty.'

She signed off, collected what she could of the mill, stowing it on the skidoo's equipment rack. Rather than head immediately back she decided to loop around to where Cookie ought to have been. She hoped he had returned but had just neglected to let the others know, but wasn't optimistic.

Minutes later the headlights picked out another windmill, its cups idling. Yet another lay further, too far for the lights. She steered for the further gauge, watching the snow beneath the skis turn powdered white to glossy pearl. Then something loomed ahead, Everard swerving so hard that she almost capsized, screeching diagonally on the edge of her left ski. The engine chainsawed and spluttered. Everard jumped off and walked toward the obstacle, knowing what she would find when she arrived.

Dead, of course –but the fact of his death was only one component of her shock. What made her breath catch was what had become of him—how he had died. Cookie had become ice, literally merging with the landscape. His clothes and exposed flesh were glistening and colourless. He was sleek, lacking detail, barely recognisable.

Nauseated, she stepped back and only then saw the other windmill properly. No more than a hundred meters away, spinning as if in a gale.

■ ■ ■

She hammered on the vehicle pool door until Villiers emerged, squeezing through the gap before she could better her previous glimpse.

'Whatever you're doing,' she said, with an anger she didn't have to fake, 'it stops now.'

'Why would we do that?'

'There's a dead body outside.' She paused, collected herself. 'I don't know what happened to him, Villiers. But I'm sure it's connected with your project.'

For all his carefully-architected bluff, she sensed he also knew something was wrong. 'What is it?' she asked. 'What are you doing? Just give me the basics. Tell me why we can't get a signal to the outside world, how something behind that door is affecting the weather for miles around us. Better still, tell me why Cookie's dead.'

'If you don't like it,' Villiers said, 'why not just leave?'

He wasn't just threatening her, Everard sensed. He tried hard to make it seem so, but buried in his remark was something else. He was fishing for information—trying to get her to tell him something.

Whether or not they could leave.

'Just stop whatever you're doing,' she said.

But Villiers looked frightened. 'We have,' he said. 'But I think the damage is already done.'

■ ■ ■

Navarre took a skidoo the next day. He radioed reports back from the three and four kay marks, and then there was silence. Everard began to allow herself to believe that he had made it; that passages existed out of the stillness.

She and Weber fuelled the Cat and loaded stores; enough for the two of them and Navarre, should they meet him.

'What about Villiers?' Weber asked. 'Can't just leave him.' She looked at him, daring him to say it again. Weber hopped aboard.

'Wait,' she said, as the four-track's diesel shivered into life, perched on the ramp which exited the secondary vehicle pool. 'I saw something out there.' She unpacked binoculars, clambered onto the roof and swept the horizon. The air was photographically clear; the sky bruise-coloured, distance difficult to judge. It was so long since Everard had seen a street or avenue of trees she doubted her brain still had the software to handle perspective.

There. A glint—low, in the vague indeterminacy where the snow met the sky. Something neither metal, ice nor flesh but intermediate between the three, twinkling. The vague shape of a skidoo.

Something beside it.

▪ ▪ ▪

Weber patted his jacket until he found a pack of crumpled Argentine cigarettes. He offered it to Everard, pointedly ignoring Villiers.

'Oughta give up,' he said, 'but right now cancer isn't high on my list of anxieties.'

Villiers toyed with a snowscape paperweight, staring into its hermetic depths with a look of horrified rapture.

'Always a risk something like this would happen,' he said, his voice an uninflected drone. 'Theorists warned us. They just didn't think it was likely.'

'Start at the beginning,' Weber said.

'You don't have clearance.'

Everard thumped the table. 'You dipshit. You think it makes any difference? If I was in a position to blurt your precious Company secrets we wouldn't be having this conversation.'

'What about afterwards?'

'Afterwards?' Weber leaned in closer. 'You mean there's a way out of this?'

'Yes. It's just...' Villiers smiled. 'A little drastic.' Everard snatched the paperweight, smashing it against the wall. Oil oozed from the cracked plastic.

'Talk.'

'I assume you guessed the basics,' Villiers said. 'That it was an experiment, a demonstration for the technology which would give us access to Mars.' He looked toward Weber. 'We were testing a Franson link.'

'Sorry,' said the big man. 'No bells a-ringing.'

'Quantum mechanics.' Villiers scratched alien stubble. 'Nonlocal correlation. Action at a distance.'

Everard turned to her colleague. 'Translate for me, will you?'

Weber made an obvious effort to sound as laconic as possible. 'Way I remember it is, when particles—photons, electrons, whatever, meet up and interact, then something odd happens. Odd enough even Einstein called it spooky.'

'Spooky?'

'His expression. It's like their identities get tangled up. Afterwards, no matter how far apart they end up, they stay in touch, like they're linked by some ghostly thread.' He looked ceilingwards, as if pausing to compile his thoughts into something Everard could follow. 'Suppose,' he said, 'you take one of the particles, and do something to it—say, put it in a magnetic field so it spins in a particular way. Then it turns out that the other particle will react accordingly. Profound enough, and it's been tested to death in the laboratory—but the real worrying part is the information seems to pass between the pair instantaneously.'

'You mean at the speed of light?'

'No, I mean instantaneously. Unmeasurably fast.'

'So,' Everard said. 'Build yourself a faster-than-light communicator.' Her mind raced ahead. 'Pretty useful if you wanted to begin mining Mars without ever leaving Earth. Goodbye timelag, hello big bucks.'

'Trouble is,' Weber said. 'No one ever figured a way of getting a useful signal through the effect. Matter of fact, it'd do nasty things to causality if you managed it.' He lit a cigarette, filling the room with its cheap tang. 'If causality was a power-drill,' he said, 'be like dropping it in a bath tub.'

'In case you hadn't noticed,' Everard said, 'there have been a few odd things happening around here.'

'No,' Villiers said suddenly. 'Causality is still intact. That's the point ... the problem, in fact.'

▪ ▪ ▪

They looked at him.

'The other particle from the Franson pair is on the moon,' he said. 'At one of the Helium 3 facilities. We've been running teleoperated machines through the link, both ways.' He glanced at Everard. 'You saw the equipment—the couch and the robot. Same set-up in the lunar base. The operator at BL6 drives the robot on the moon, and the operator on the moon drives the robot you saw in the pool.'

'Go on.'

'We had experts working on the experiment, of course. Some of them said it would fail because of the implied violation of causality ... but others said the causal problem showed the theory was too idealised.'

'So you went ahead anyway.'

'One of the theorists—a woman called Chu—came close to predicting what has happened,' Villiers said, in the same autistic drone. 'She said the link could be made, and causality preserved—at the same time.' He opened Everard's desk, pulled out a notepad and pen, tore off a sheet. 'Take two locations, such as BL6 and the lunar base, connected by a Franson link.' His hand—which, Everard noted, was entirely steady—drew an A and B on the paper, two or three inches apart, then a dashed line between them. 'Information can now flow between A and B instantaneously. As Chu pointed out, causality can only be maintained if A and B become isolated from the rest of

the universe. Provided no information from either A or B can escape elsewhere, the linking creates no causal violation.' He drew a dumbbell shape which enclosed A, B and the dashed line of the link. 'Now, no one took Chu's prediction very seriously. Except possibly Mother Nature.' Grinned. 'She's encapsulated us, you see. Locked us in. The ultimate Iron Curtain.'

Everard stared at the diagram. 'But we're not isolated,' she said. 'We're still picking up CNN, for Christ's sake.'

'But that doesn't invalidate Chu. Information can reach us from outside—as long as information never gets out.'

'All right.' Everard said. 'What about Cookie, or Navarre?'

'From what you've described, I'd say it was very simple.' Villiers paused, added softly: 'Degradation.'

'What?'

'Degradation. Matter is information, in the end. The further they got from BL6—the closer they got to the boundary—the less stable they became. The information which described them leaked away. They became more uniform, less distinct. They began to resemble their surroundings, mulching down to something more basic.'

'You're talking about my men,' Everard said. 'Count yourself lucky you didn't join them. The only reason you're alive is that the boundary must be shifting, sometimes closer, sometimes further out.'

'Do me a favour,' Weber said. 'Try not to sound so damned fascinated by it.'

'But it is fascinating, isn't it? Oh, I'm sure they died quickly. Eventually you won't be able to tell them from the ice—itself degrading. I don't know what will eventually happen—I suppose matter near the boundary will become mono-atomic, and then even the atoms will collapse, first down to naked electrons and baryons, and then some kind of quark soup.'

'Could put a downer on your whole day,' Weber said. 'Now, was I imagining it, or did dickwad here say something about a way out of this mess?'

'I said it was drastic,' Villiers said. 'I wasn't joking.'

■ ■ ■

'Your people still in there?' Weber asked, outside the pool. Villiers dug through Amex and Hertz plastic for the card. He whisked it through the slot, the access light turning green and the door opening.

'Mind telling us this solution?' Weber said. 'So I can tell my grandchildren, if nothing else.'

'You'll learn.'

What hit them, stepping inside, was neither the glare nor bustle Everard had seen before. There was no sound at all, the room dark apart from monitors and check lights. Instead, there was the overwhelming stench of Stolichnaya and death.

'Jesus,' Everard said. 'What…'

'Wait.'

Weber stepped outside, folded back a bee-striped panel and threw switches.

Secondary lighting stammered on.

'When were you were here last, Villiers?'

'An hour,' he said. 'Two hours … don't know…' There were three of his people in the pool. They were obviously, violently dead, and this was nothing like the crystalline, translucent death Everard had seen outside.

Vodka bottles lay upturned or shattered on the floor, but it wasn't the vodka which had killed them. They had been bludgeoned. Dried blood and chunks of excavated flesh spattered the room, as if one of them had gone amok with a mace.

Villiers walked toward the dead.

'Careful,' Weber said. Everard stepped inside, the security door closing. Villiers reached the first victim, killed by a head injury. He was grasping a perforated steel spar.

'Must have injured himself after killing the others,' Villiers said, examining the man's badge. 'Quince; always knew he was flaky.'

'Don't think so,' Weber said slowly. 'No blood on that stick.'

Which was when it happened.

The tank—the tracked robot Everard had seen before—burst into life, whining across the blood-slick floor toward Villiers. The machine's clawed manipulators were scything the air; a blur of red-stained chrome.

Villiers slipped, hitting the floor with a crack, moaning even before the machine reached him. The claws moved with human dexterity, snagging his clothes and raising him to his feet. He fought the machine, trying to overbalance it, but the fall had winded him. The machine propelled him against the wall, reversed, repeated the move.

Weber shoved Everard toward the closing security door.

'No,' she said, raising her voice above the machine's servomotors. 'The card.'

Weber dived back into the fray and ran behind the machine, still preoccupied with Villiers. 'Who the hell's operating this thing?' he shouted, sticking a boot into the robot's rear end. A thick umbilical connected the machine to the central apparatus; Weber grabbed it and tugged.

'Someone on the moon, I guess,' Everard said. 'Watch it!' Weber had the robot's attention. It left Villiers slumped in the corner, spinning round, tracks screeching against the floor.

'Someone up there is seriously pissed,' Weber said, still managing to sound as if he was commentating on a dull poker game.

Everard reached Villiers while Weber kept the robot busy. It took an eternity to get the man's jacket open and his wallet out; even longer to find the compartment where the cards lay. She began to riffle through them, trying to pick out the one which would access the pool.

'Hey,' Weber said. 'Just take the damned wallet, will you?'

Everard nodded and did what he said, wondering why she had hesitated.

The door was shut when she reached it. She had assumed there would be a simple control to open it from the inside, but—consistent with the Company's general level of paranoia about this whole project—one needed a card just to leave.

'Weber,' she called. 'Get ready to run.'

She rammed the card through the slot, waiting for the red light to change to green and the door to swing open.

Nothing happened.

Wrong way. She flipped the card, and this time it worked, the door commencing its ponderous opening arc. Everard wriggled through, then told Weber to follow.

He hopped the umbilical and sprinted, no sound but his footfalls and the whine of the robot. He reached the gap a metre ahead of the machine, leaping so hard he ended up sprawled in the corridor.

The robot thumped the frame and growled, like something bestial which had missed its prey.

■ ■ ■

'Sure Villiers was dead?' he asked, back in her office.

'History,' Everard said. 'Which means, I think, that we have a fairly major problem. He knew a way out of this mess.'

'I did ask him.'

'I know.' Her head was throbbing, and she suddenly realised that she hadn't slept—or even thought of sleep—for far too many hours. 'Maybe you shouldn't have flunked that assertiveness course.'

Weber started fixing coffee. 'Everard, did it strike you as odd what happened down there?'

She peered through fingers. 'Weber, right now I think I need a new definition of oddness. But go ahead.'

'Why'd it attack?' He was poised with a spoonful of coffee in one hand. 'Why the hostility? I mean, assume there's a group of people up on one of the Helium 3 stations in much the same predicament as us—cut off, confused, panicky. Surely they need our help in understanding the situation, much as we need theirs.' He filled the coffee maker with water and set it running. 'Unless they know something we don't.'

'Such as?'

He sat down. 'Well, only a guess, but maybe it was self-defence.'

'Don't follow.'

'I think. Villiers told us there was a way out, but he said it was drastic. Well, suppose his solution helped us but not them? More to the point, what if it was positively fatal for them?'

'Maybe,' Everard said, trying not to sound too convinced. 'In which case, where does that leave us? Even if we figure out what Villiers had in mind, could we do it?'

'I hate to say it,' Weber said. 'But I think we probably could.'

The coffee hissed and gurgled. Everard fell asleep before it was ready, dreaming of imprisonment within the paper weight, knocking unheard on its plastic.

■ ■ ■

Knocking woke her. Weber was gone, but the coffee was warm, and she guessed she had not fallen asleep for more than 30 minutes. It was enough: for a moment she felt ridiculously alert.

The knocking came from the pool. Weber was there already, kneeling by the door.

'What is it?' Everard asked, mouth gummy.

'The robot,' he said. 'Started just now, banging the door.'

'Can't get through, can it?'

'No chance. Needs the umbilical connection to the Franson equipment.' He was writing on a notepad. 'Weber, what's going on?'

He held up the sheet. 'I assume two rapid knocks stands for a dash.'

'Morse code,' Everard said, astonished. 'Well, what's it say?'

'No idea,' Weber said. 'I'm just a communications engineer, not a Boy Scout. But I know one thing. Someone wants to chat.'

The knocking continued, deliberate and arrhythmic. Weber was right, of course: the content of the message mattered less than the fact that it existed. Everard knew what she had to do.

She fished out Villiers's card, wondering if the clarity she felt was just the onset of insanity.

* * *

As the door opened the robot retreated, umbilical hissing across the floor.

'Stay outside,' she told Weber. 'No use two of us falling for the same trap.'

The robot jerked forward, then stopped a few metres away. She stepped backward, then the machine did it again, shepherding her across the pool, toward the equipment in the middle. Everard tried to ignore the corpses in the room, with limited success. She remembered how easily the machine had crushed Villiers, a petulant child smashing a rag doll against the wall.

The machine directed her to the teleoperation couch. Much of what she had to do was obvious; nestling hands and feet into sensor-padded gloves and socks, then placing a helmet over her head. After a moment of darkness colours burst before her then resolved into vision.

She was looking at a room similar to the one in which she lay, though larger and less cluttered. She wiggled her head and found her point of view changing. Oval windows overlooked a salmon-grey moonscape, dimpled by structures and equipment.

'Over here.' A woman's voice, but not one she recognised. 'Over here,' it called again.

'Make a walking movement.'

Everard's point of view lurched forward. She figured the thing she was driving was similar to the robot which had killed Villiers. Certainly, the Franson link worked as advertised: no hint of time-lag or delayed response. Even after only a few seconds, Everard felt physically present in the Helium 3 facility; physically present on the moon.

'You'll get the hang of it,' said the woman who stood in front of her now. She was small-seeming, arms crossed, Asian.

'Can you hear me?' Everard asked.

'Perfectly well. You, I presume, are Dr Everard.'

'Who are you?'

'That doesn't matter.' The woman ushered Everard across the room. 'This need only be brief. I just wanted to clarify things. In any case I don't have all that much time.' She nodded toward the airlock which presumably sealed off the room. 'I'm the last one alive. We lost power shortly after the effects of the link began to take hold. I have a few hours of air, but even if the effects of the link could be neutralized help would come too late. I'm going to die whatever happens.'

'You can't be sure.'

'No, I'm afraid I can. One can be quite analytic about such matters out here. You, though…' she paused. 'I know there are at least two of you. You're not in any immediate danger, are you?'

Everard thought of the diesel generators BL6 still had, of the untouched store of rations. 'No,' she answered. 'We're okay down here.'

'Good.' Managing a smile. 'Your chances are good. The horizon—the information barrier which surrounds us—can be broken, at least in theory'

'Whose theory?'

'Mine,' she said. And Everard realised that the name on the woman's shirt was Chu; the theorist Villiers had spoken about before his death. 'There is a nuclear device here, Dr Everard. A small one; for mining purposes only, of course. Detonation of the device will create a fireball. The energy should shatter the information barrier, provided we use it soon enough. The barrier is like scar tissue, you see—constantly thickening. At the moment still rather weak, perhaps weak enough to be punctured by a nuclear explosion. Once the barrier around this facility is breached, that around yours should collapse as well.'

'Villiers was right,' Everard said. 'That is rather drastic.'

'And not guaranteed to work,' Chu said. 'But it's all you have.' She paused. 'You understand why I killed the others. They were going to detonate the device whether I liked it or not.' She smiled again. 'I couldn't let them do that. It had to be my sacrifice.'

'But you'll die.'

Again that smile. 'I'm dead, Dr Everard. At least this way you get to survive.'

■ ■ ■

Chu gave her ten minutes. Everard wriggled off the couch and left the pool, meeting Weber outside. 'What happened?'

'No time to explain,' she said. 'We're leaving.'

'Now?'

She nodded. 'We'll take the Cat.'

They jogged to the secondary vehicle pool, Everard praying that the four-track would cough into life when she turned the ignition, thinking of when it hadn't, when some diesel part had to be taken out and cleaned, an hour or more of work at least. An hour or more was precisely what they didn't have.

Blue exhaust billowed out, Weber coughing as he hopped in next to her. Everard kicked in the transmission, the tracks screeching before gripping. Suddenly they moved, easing up the ramp, out into open air.

'Everard,' Weber said. 'Mind me asking a couple of questions?'

She steered away from BL6—all that mattered—and turned to Weber. 'I met Chu,' she said, out of breath. 'Up at the Helium 3 facility.'

'And?'

'She's going to get us out of this.'

And told him the rest; how Chu was the only person left alive up there, how she would detonate the nuclear device in the hope of cracking the information barrier around the Helium 3 facility. 'She says once the barrier at that end is down, there'll be no causal requirement for ours. It should just collapse.' She looked at her watch. 'About two minutes, if she keeps her word.'

'Sounds like she meant it,' Weber said. 'There's just one thing I don't understand.'

Everard kept the hammer down. Even at the speed they were making, there was no danger of reaching more than a couple of kilometres from BL6 before Chu detonated the device; no

danger of reaching the point where Cookie or Navarre had died. But that one or two kilometres of distance might make all the difference.

'Go on.'

'Why such a hurry to leave?'

'Chu said there could be leakage,' Everard said. 'From the explosion. Some of it could leak through the link.' Checked her watch again. About one minute; maybe less. 'Normally only information gets through. But Chu said the equations allowed solutions where energy could leak through as well. She wasn't sure whether they were applicable, but…' Another glance at the watch. Less than a minute, surely. 'She said we shouldn't take any chances. Best to get as far away from BL6 as possible.'

Weber maintained a stunned silence.

Everard glanced in the rear-view mirror. The base was about a kilometre behind now. Any distance made in the next few seconds surely would make no difference.

She killed the engine. 'Weber, pass me the binoculars.'

Everard hopped onto the ice. She propped elbows on the hot cowling and pointed the binoculars at the crescent moon. Chu had said that her base was in shadow, which meant it had to be in the unlit, gibbous region.

Right now, Everard thought, anyone approaching BL6 from beyond the barrier would see a zone of hemispherical blackness; a region from which no information could flow. Same went for the Helium 3 facility … except any moment now, Chu was going to shatter the barrier, and nuclear light would erupt through.

She ought to be able to see that; if only as a transient pin prick against the darkness. Any second now.

'Everard!'

Weber was pointing back toward BL6, with the strangest expression Everard had ever seen. She followed his gaze.

Light was streaming from the base; a pinkish, eye-hurting, twisting column of fire, nebulized by flickering branches of lightning. It whiplashed back and forth, evil and tentacular.

Everard thought of that fire, instantly consuming Chu, instantly consuming everything.

Leakage. Before the glare blinded her, she looked to the moon, and saw—though she was never certain it was real—a glint of colourless light, in the moon's shadowed portion.

The column of fire streaming from BL6 ended, abruptly, leaving a ringing silence. Everard hadn't noticed the noise while it was there. But now it was over she realised it had been the loudest sound she had ever heard. She almost could not hear Weber shouting to her.

'What?' she mouthed, the ringing in her ears drowning out her own voice.

'Look!'

Weber was pointing away from the smoking wreckage of the base toward the Getz straits. She squinted and made out the tiny, distant shape of a windmill. Spinning crazily. Everard waited for the wind's cold slap against her skin. It came softly, building in stages until she knew it had to be at least a sixer. The sting had never felt so good.

'C'mon,' she said to Weber. 'Russkaya station's a good 50 klicks from here. We've got a long drive ahead of us.'

Plenty of time, she thought, to consider a career move.

The Star Surgeon's Apprentice

Through the bar's windows Juntura Spaceport was an endless grid of holding berths, launch gantries and radiator fins, coiling in its own pollution under a smeared pink sky. The air crackled with radiation from unshielded drives. It was no place to visit, let alone stay.

'I need to get out of here,' I said.

The shipmaster sneered at my remaining credit. 'That won't get you to the Napier Belt, kid, let alone Frolovo.'

'It's all I've got.'

'Then maybe you should spend a few months working in the port, until you can pay for a ride.'

The shipmaster—he was a cyborg, like most of them—turned away with a whine of his servo-driven exoskeleton.

'Wait,' I said. 'Please … just a moment. Maybe this makes a difference.'

I pulled a black bundle from inside my jacket, peeling back enough of the cloth to let him see the weapon. The shipmaster—his name was Master Khorog—reached out one iron gauntlet

and hefted the prize. His eye-goggle clicked and whirred into focus.

'Very nasty,' he said appreciatively. 'I heard someone used one of these against Happy Jack.' The eye swivelled sharply onto me. 'Maybe you know something about that?'

'Nothing,' I said easily. 'It's just an heirloom.'

The heirloom was a bone gun: Kalarash Empire tech: very old, very difficult to pick up in security scans. Not much of it around any more, which is why the gun cost me so much. It employed a sonic effect to shatter human bone, turning it into something resembling sugar. Three seconds was all it needed to do its work. By then the victim no longer had anything much resembling a skeletal structure.

You couldn't live long like that, of course. But you didn't die instantly either.

'The trick—so they say—is not to dwell on the skull,' Khorog mused. 'Leave enough cranial structure for the victim to retain consciousness. And the ability to hear, if you want to taunt them. There are three small bones in the ear. People usually forget those.'

'Will you take the gun or not?'

'I could get into trouble just looking at it.' He put the gun back onto the cloth. 'But it's a nice piece. Warm, too. It might make a difference. There used to be a good market for antique weapons on Jelgava. Maybe there still is.'

I brightened. 'Then you can give me a berth?'

'I only said it makes a difference, kid. Enough that you can pay off the rest aboard the *Iron Lady*.'

I could already feel Happy Jack's button men, pushing their way through the port, asking urgent questions. Only a matter of time before they hit this bar and found me.

'If you can get me to the Frolovo Hub, I'll take it.'

'Maybe we're not going to Frolovo. Maybe we're going to the Bafq Gap, or the Belterra Sphere.'

'Somewhere nearby, then. Another hub. It doesn't matter. I just have to get off Mokmer.'

'Show us your mitts.' Before I could say yes, Khorog's metal hands were examining my skin and bone ones, splaying the fingers with surprising gentleness. 'Never done a hard day's work in your life, have you? But you have good fingers. Hand to eye coordination OK? No neuromotor complications? Palsy?'

'I'm fine,' I said. 'And whatever it is you want me to do, I can learn.'

'Mister Zeal—our surgeon—needs an assistant. It's manual labour, mostly. Think you can handle it?'

Jack's men, closer now. 'Yes,' I said. By then I'd have said anything to get off Mokmer.

'There'll be no freezer berth: the *Iron Lady* doesn't run to them. You'll be warm the whole trip. Two and half years subjective, maybe three, 'til we make the next orbitfall. And once Zeal's trained you up, he won't want you leaving his service at the first port of call. You'll be looking at four or five years aboard the *Lady*; maybe longer if he can't find another pair of hands. Doesn't sound so sweet now, does it?'

No, I thought: but then neither did the alternative.

'I'm still willing.'

'Then be at shuttle dock nine in twenty minutes. That's when we lift for orbit.'

■ ■ ■

We lifted on time.

I didn't see much of the ship from the shuttle: just enough to tell that the *Iron Lady* looked much the same as all the other ramscoops parked in orbit around Mokmer: a brutalist grey cylinder, swelling to the armoured mouth of the magnetic field intake at the front, tapering to the drive assembly at the back. Comms gear, radiators, docking mechanisms and modular cargo containers ringed the ship around its gently in-curving waist. It was bruised and battered from endless near-light transits, with great scorch marks and impact craters marring much of the hull.

The shuttle docked with just Khorog and I aboard. Even before I had been introduced to the rest of the crew—or at least the surgeon—the *Iron Lady* was moving.

'Sooner than I expected,' I said.

'Complaining?' Khorog asked. 'I thought you wanted to get away from Mokmer as soon as possible.'

'No,' I said. 'I'm glad we're underway.' I brushed a wall panel as we walked. 'It's very smooth. I expected it to feel different.'

'That's because we're only on in-system motors at the moment.'

'There's a problem with the ramscoop?'

'We don't switch on the scoop until we're well beyond Mokmer—or any planet, for that matter. We're safe in the ship—life quarters are well shielded—but outside, you're looking at the strongest magnetic field this side of the Crab pulsar. Doesn't hurt *wetheads* like you all that much … but us, that's different.' He knuckled his fist against his plated cranium. 'Cyborgs like me … cyborgs like everyone else you'll meet aboard this ship, or in any kind of space environment—we feel it. Get within a thousand kilometers of a ship like this … it warms up the metal in our bodies. Inductive heating: we fry from the inside. That's why we don't light the scoop: it ain't *neighbourly*.'

'I'm sorry,' I said, realising that I'd touched the cyborg equivalent of a nerve.

'We'll light in good time.' Khorog hammered one of the wall plates. 'Then you'll feel the old girl shiver her timbers.'

On the way to the surgeon we passed other members of the *Iron Lady's* redoubtable crew, none of whom Khorog saw fit to introduce. They were a carnival of grotesques, even by the standards of the cyborgs I'd seen around the spaceport. One man consisted of a grinning, cackling, gap-toothed head plugged into a trundling life-support mechanism that had apparently originated as a cleaning robot: in place of wheels, or legs, he moved on multiple spinning brushes, polishing the deck plates behind him. A woman glanced haughtily at me as she passed: normal enough except that the upper hemisphere of her skull was a glass dome, in which resided a kind of ticking orrery: luminous planetary

beads orbiting the bright lamp of a star. As she walked she rubbed a hand over the swell of her belly and I understood—as I was surely *meant* to—that her brain had been relocated there for safekeeping. Another man moved in a similar exoskeleton to the one Khorog wore, but in this case there was very little man left inside the powered frame: just a dessicated whisp, like something that had dried out in the sun. His limbs were like strands of rope, his head a piece of shrivelled, stepped-on fruit. 'You'll be the new mate, then,' he said, in a voice that sounded as if he was trying to speak while being strangled.

'If Zeal agrees to it,' Khorog said back. 'Only then.'

'What if Mister Zeal doesn't agree to it?' I asked, when we were safely out of earshot.

'Then we'll find you something else to do,' Khorog replied. 'Always plenty of jobs on the…' And then he halted, as if he'd been meaning to say something else, but had caught himself in time.

By then we'd reached the surgeon.

Mister Zeal occupied a windowless chamber near the middle of the ship. He was working on one of his patients when Khorog showed me in. Hulking surgical machines loomed over the operating table, carrying lights, manipulators and barbed, savage-looking cutting tools.

'This is the new assistant,' Khorog said. 'Has a good pair of hands on him, so try and make this one last.'

Zeal looked up from his work. He was a huge, bald, thick-necked man with a powerful jaw. There was nothing obviously mechanical about him: even the close-up goggle he wore over his left eye was strapped into place, rather than implanted. He wore a stiff leather apron over his bare, muscular chest, and he glistened with sweat and oil.

His voice was a low rumble. 'Just a pup, Master Khorog. I asked for a man.'

'Beggars can't be choosers, Mister Zeal. This is what was on offer.'

Zeal stood up from the table and studied me with a curl on his lips, wiping his right hand against his apron. He pushed his

left hand against the rust-dappled side of one of the surgical machines, causing it to move back on a set of caterpillar tracks. He stepped over a body that happened to be lying on the floor, scuffing his boot heel against the chest.

The voice rumbled again. 'What's your name, lad?'

'Peter,' I said, fighting to keep my nervousness in check. 'Peter Vandry.'

He pushed the goggle off his eye, up onto his forehead.

'Your hands.'

'I'm sorry?'

He roared: 'Show me your damned hands, boy!'

I stepped closer to the surgeon and offered him my hands. Zeal examined them with a particular attentiveness, his scrutiny more thorough, more methodical, than Khorog's had been. He looked at my tongue. He peered back my eyelids and looked deep into my eyes. He sniffed as he worked, the curl never leaving his lips. All the while I tried to ignore the semihuman thing laid out on the operating table, horrified that it was still breathing, still obviously alive. The crewman's torso was completely detached from his hips and legs.

'I need a new mate,' Zeal told me. He kicked the body on the floor. 'I've been trying to manage ever since with this *lobot*, but today...'

'Temper got the better of you, did it?' Khorog asked.

'Never mind my temper,' Zeal said warningly.

'Lobots don't grow on trees, Master Zeal. There isn't an inexhaustible supply.'

The surgeon snapped his gaze back onto me. 'I'm a pair of hands down. Do you think you can do better?'

My throat was dry, my hands shaking. 'Master Khorog seemed to think I could do it.' I held out my hand, hoping he didn't notice the tremble. 'I'm steady.'

'Steadiness is a given. But do you have the stomach for the rest?'

'I've seen worse than that,' I said, glancing at the patient. But only today, I thought: only since I left Happy Jack flopping and oozing on the carpet.

Zeal nodded at the other man. 'You may leave us now, Master Khorog. Please ask the captain to delay drive start-up until I'm finished with this one, if that isn't too much trouble?'

'I'll do what I can,' Khorog said.

Zeal turned smartly back to me. 'I'm in the middle of a procedure. As you can tell from the lobot, things took a turn for the worse. You'll assist in the completion of the operation. If things conclude satisfactorily … well, we'll see.' The curl became a thin, uncharitable smile.

I stepped over the dead lobot. It was common knowledge that space crews made extensive use of lobots for menial labour, but quite another to see the evidence. Many worlds saw nothing wrong in turning criminals into lobotomized slave labour. Instead of the death sentence, they got neurosurgery and a set of implants so that they could be puppeted and given simple tasks.

'What do you want me to do?' I asked.

Zeal lowered his goggle back into place, settling it over his left eye.

'Looking in the rough direction of the patient would be a start, lad.'

I forced myself to take in the bloody mess on the table: the two detached body halves, the details of meat and bone and nervous system almost lost amid the eruptive tangle of plastic and metal lines spraying from either half: carrying pink-red arterial blood, chemical green pneumatic fluid. The tracked machines attending to the operation were of ancient, squalid provenance. Nothing in Zeal's operating room looked newer than a thousand years old.

Zeal picked up the end of one segmented chrome tube. 'I'm trying to get this thoracic line in. There was a lot of resistance … the lobot kept fumbling the job. I'm assuming you can do better.'

I took the end of the line. It was slippery between my fingers. 'Shouldn't I … wash, or something?'

'Just hold the line. Infection's the least of his worries.'

'I was thinking of me.'

Zeal made a small gutteral sound, like someone trying to cough up an obstruction. 'The least of yours as well.'

I worked as best I could. We got the line in, then moved onto other areas. I just did what Zeal told me, while he watched me with his one human eye, taking in every slip and tremor of my hand. Once in a while he'd dig into the wide leather pocket sewn across the front of his apron and come out with some new blade or tool. Occasionally a lobot would arrive to take away some piece of equipment or dead flesh, or arrive with something new and gleaming on a plate. Now and then the tracked robot would creep forward to assist in a procedure. I noticed, with skin-crawling horror, that its dual manipulator arms ended in a perfect pair of female human hands, long fingered and elegant and white as snow.

'Forceps,' he'd say. 'Laser scalpel.' Or, sometimes: 'Soldering iron.'

'What happened to this man?' I asked, feeling I ought to be showing interest in more than just the mechanics of the operation.

'Hold that down,' Zeal said, ignoring my question completely. 'Cut there. Now make a knot and tie off. God's teeth, *careful*.'

A little while later, the engine lit up. The transition to thrust weight was sudden and unannounced. The floor shook violently. Equipment clattered off trays. Zeal slipped with a knife, ruining half an hour's work, and swore in one of the ancient trade languages.

'They've lit the drive,' he said.

'I thought you asked...'

'I did. Now apply pressure *here*.'

We kept on working, even as the ship threatened to shake itself to bits. Scoop instability, Zeal said: it was always rough at first, before the fields settled down. My back began to ache from all the leaning over the table. Yet after what felt like many hours we were done: the two halves reunited, the interconnects joined, the bone and flesh encouraged to fuse across the divide.

With the patient sewn up, rebooted and restored to consciousness. I rubbed my back as Zeal spoke softly to the man, answering his questions and nodding now and then.

'You'll be all right,' I heard him say. 'Just keep away from any cargo lifts for a while.'

'Thanks,' the cyborg said.

The crewman got up off the table, whole again—or as whole as he would ever be. He walked stiffly to the door, pawing at his healed injuries in a kind of stunned wonderment, as if he had never expected to leave the operating table.

'It wasn't as bad as it looked,' Zeal told me, when the patient had gone. 'Stick with me, and you'll see a lot worse.'

'Does that mean you'll let me stay?'

Zeal picked up an oily rag and threw it my way. 'What else would it mean? Clean yourself up and I'll show you to your quarters.'

■ ■ ■

It was a job, and it had got me off Mokmer. As gruesome as working for Zeal might have been, I kept reminding myself that it was a lot better than dealing with Happy Jack's button men. And in truth, it could have been a lot worse. Gruff as he had been to start with, Zeal gradually opened up and started treating me ... not exactly as an equal, but at least as a promising apprentice. He chided me when I made mistakes, but was also careful to let me know when I had done something well: when I'd sewn up a wound nicely, or when I'd wired in a neuromotor implant without causing too much surrounding brain damage. He wouldn't say anything, but the curl of his lip would soften and he'd favour my efforts with a microscopic nod of approval.

Zeal, I came to learn, enjoyed an uneasy relationship with the rest of the *Iron Lady*'s crew. It must have always been that way, for ship's surgeons. They were there to keep the crew healthy, and much of their work was essentially benign: the treating of minor ailments, the prescribing of restorative drugs and diets.

But occasionally they had to do unspeakable things; things that inspired dread and horror. And no one was beyond the surgeon's reach, even the captain. If a crewman needed treatment, he was going to get it—even if Zeal and his lobots had to drag the man screaming and kicking to the table.

Most of the accidents, though, tended to happen during port time. Now that we were under flight, sucking interstellar gases into the ramscoop field, climbing inexorably closer to the speed of light, Zeal's work tended to minor operations and adjustments. Days went by with nobody to treat at all. During these intervals, Zeal would have me practising on the lobots, refining my techniques.

Three or four years, Khorog had said. Longer if Zeal couldn't find a replacement. With only a week under my belt, it seemed like a life sentence aboard the *Iron Lady*. But I would get through it, I promised myself. If conditions became intolerable, I would just jump ship in the next port of call.

In the meantime I got to know as much of my new home as I was allowed. Large areas of the *Iron Lady* were out of bounds: the rear section was deemed too radioactive, while the front was closed to low-ranking crewmembers like myself. I never saw the captain; never learned his name. But that still left a labyrinth of rooms, corridors and storage bays in which I was allowed to roam during my off-duty hours. Now and then I would pass other crewmembers, but apart from Khorog none of them ever gave me the time of the day. Zeal told me not to take it to heart: it was just that I was working for *him*, and would always be seen as the butcher's boy.

After that, I began to take a quiet pride in the fear and respect Zeal and I enjoyed. The other crew might loathe us, but they needed us as well. Our knives gave us power.

The lobots were different: they neither feared nor admired us, but simply did what we wanted with the instant obedience of machines. They didn't have enough residual personality to feel emotions. That was what I'd been told, anyway, but I still found myself wondering. There were nine of them on the *Iron Lady*: five men and four women. Looking into their

slack, sleepwalker faces, I couldn't help wondering what kind of people they had been before; what kinds of lives they had led. It was true that they must have all committed capital crimes to have become lobots in the first place. But not every planet defined capital crimes in exactly the same way.

I knew there were nine, and only nine, because they came through Zeal's room on a regular basis, for minor tweaks to their control circuitry. I got to know their faces; got to recognise their slumping, shuffling gait as they walked into a room.

One day, however, I saw a tenth.

Zeal had sent me off on an errand to collect replacement parts for one of his machines. I'd taken a wrong turning, then another one, and before I realised quite how lost I was, I had ended up in an unfamiliar part of the *Iron Lady*. I stayed calm at first, expecting that after ten or twenty minutes of random wandering, I'd find a corridor I recognised.

I didn't.

After thirty minutes became an hour, and every new corridor looked less familiar than the last, I began to panic. There were no markings on the walls; no navigation consoles or colour-coordinated arrows. The ship's dark architecture seemed to be rearranging itself as I passed, confounding my attempts at orientation. My panic changed to dread as I considered my plight. I might starve before I found my way back to the part of the ship I knew. The *Iron Lady* was huge, and its living crew tiny. If they had little cause to visit these corridors, it might be years before they found my dead body.

I turned another corner, more in desperation than hope, and faced yet another unrecognised corridor. But there was someone standing at the end of it. The harsh overhead light picked out only her face and shoulders, with the rest of her lost in shadow. I could see from her collar that she wore the same kind of overall as the other lobots. I could also see that was quite pretty. The lobots were usually shaved to the scalp, to make life easier when their heads had to be opened. This one had a head of hair. It grew out ragged and greasy, tangled like the

branches of an old tree, but it was still hair. Beneath it was a pale, almond-shaped face half lost in shadow.

She started back from me, vanishing into deeper shadow and then around a bend at her end of the corridor.

'Wait!' I called. 'I'm lost! I need someone to show me the way out of here!'

Lobots never spoke, but they understood spoken instructions. The girl should have obeyed me instantly. Instead she broke into a running shuffle. I heard her shoes scuffing on the deck plating.

I chased after her, catching up with her easily before she reached the end of the next corridor. I seized her by the left arm and forced her to look at me.

'You shouldn't have run. I just need to know how to get out of here. I'm *lost*.'

She looked at me from under the stiff, knotted overhang of her hair. 'Who you?' she asked.

'Peter Vandry, surgeon's mate,' I said automatically, before frowning. 'You talk. You're not *meant* to talk.'

She lifted up her right arm, the sleeve of her overall slipping down to reveal a crude mechanical substitute for a hand. This clawlike appendage was grafted onto her forearm, held in place by a tight black collar. I thought for a moment that she meant to shock me, but then I realised that she was only making a human gesture, touching the tip of her mechanical hand against the side of her head.

'I ... talk. Still ... something left.'

I nodded, understanding belatedly. Some of the lobots were clearly allowed to retain more mental faculties than others. Presumably these were the lobots that needed to engage in more complex tasks, requiring a degree of reciprocal communication.

But why had I never seen this one before?

'What are you doing here?' I asked.

'I ... tend.' She screwed up her face. Even this stripped-down approximation to normal speech was costing her great effort. '*Them*. Keep *them* ... working.'

'What do you mean, them?'

She cocked her head behind us, in the direction of wall plating. 'Them.'

'The engine systems?' I asked.

'You … go now.' She nodded back the way I had chased her. 'Second … left. Third right. Then you … know.'

I let her go of her, conscious that I had been holding her left arm too tightly. I saw then that both her hands had been replaced by mechanical substitutes. With a shudder my thoughts raced back to the surgical machine in Zeal's operating room, the one with the feminine hands.

'Thank you,' I said softly.

But before I could leave her she suddenly reached out her left hand and touched the metal to the side of my head, running her fingers against the skin. 'Wethead,' she said, with something like fascination. 'Still.'

'Yes,' I said, trying not to flinch against the cold touch. 'Zeal's talked about putting some implants into me soon, to help with the surgery … nothing irreversible, he says … but he hasn't done it yet.'

Why was I talking to her so openly? Because she was a girl. Because it had been a long time since I'd seen someone who looked even remotely human, let alone someone pretty.

'Don't let,' she said urgently. 'Don't let. *Bad thing* happen soon. You OK now. You *stay* OK.'

'I don't understand.'

'You stay wethead. Stay wethead and get off ship. Soon as can. Before *bad thing*.'

'How am I supposed to get off the ship? We're in interstellar space!'

'Your problem,' she said. 'Not mine.'

Then she turned away, the sleeves of her overalls falling down to hide her hands.

'Wait,' I called after her. 'Who are you? What is … what *was* your name?'

She paused in her stiff shuffle and looked back at me. 'My name … gone.' Then her eyes flashed wild in the shadows.

'Second left. Third right. Go now, Peter Vandry. Go now then *get off ship*.'

■ ■ ■

Zeal and I were midway through another minor procedure when the engagement began. The *Iron Lady* shook like a struck bell. 'God's teeth!' Zeal said, flinging aside his soldering iron. 'What now?'

I picked up the iron and wiped sandpaper across its tip until it was bright again. 'I thought the scoop fields were supposed to have settled down by now.'

'That didn't feel like a field tremor to me. Felt more like an attack. Pass me the iron: we'll sew this one up before things get worse.'

'An attack?' I asked.

Zeal nodded grimly. 'Another ship, probably. They'll be after our cargo.'

'Pirates, you mean?'

'Aye, son. Pirates. If that's what they are.'

We tidied up the patient as best we could, while the ship continued to shudder. Zeal went to an intercom, bent a stalk to his lips and spoke to the rest of the crew, before returning to me. 'It's an attack,' he said. 'Just as I reckoned. Apparently we've been trying to outrun the other ship for weeks. Quite why no one thought to *tell* me this...' He shook his head ruefully, as if he expected no better.

We were a long way in from the hull, but the impacts still sounded like they were happening next door. I shuddered to think of the energies being flung against the *Iron Lady*'s already bruised armour. 'How long can we hold?' I asked.

'Come with me,' Zeal said, pushing the goggle up onto his forehead. 'There's a reinforced observation bubble not far from here. It's not often you'll get to see close action, so you might as well make the most of it.'

Something in Zeal's tone surprised me. He'd been annoyed at the interruption to his surgical work, but he still did not

sound particularly alarmed at the fact that we were being shot at by another ship.

What did Zeal know that I didn't?

As he led me to the observation bubble, I finally found the nerve to ask the question I had been meaning to put to him ever since I met the girl in the corridor, several weeks ago. Now that he was distracted with the battle, I assumed he wouldn't dwell overlong on my questions.

'Mister Zeal ... that lobot we were just working on...'

He looked back at me. 'What about it?'

'It seems funny that we can do so much to their brains ... put stuff in, take stuff out...'

'Go on.'

'It seems funny that we never give them *language*. I mean, they can understand us ... but wouldn't it be easier if they could talk to us as well? At least that way we'd know that they'd understood our instructions.'

'Language modules are too expensive. The captain has one, but that's only because a hull spar took out his speech center.'

'I'm not talking about cyber modules.'

Zeal halted and looked back at me again. Around us, the ship rocked and roared. Emergency alarms sounded from the distance. A mechanical voice intoned warning messages. I heard the shriek of a severed air line.

'What, then?'

'Why do we take out the language center in the first place? I mean, why not just leave it intact?'

'We take the lobots as we get 'em, son. If the speech center's been scooped out ... it isn't in our power to put it back again.'

I steadied myself against a bulkhead, as the floor bucked under us. 'Then they're all like that?'

'Unless you know otherwise.' Zeal studied me with chilling suspicion. 'Wait,' he said slowly. 'This line of questioning ... it wouldn't be because you've seen *her*, would it?'

'Her, Mister Zeal?'

'You know who I mean. The other lobot. The tenth one. You've met her, haven't you?'

'I...' Zeal had the better of me. 'I got lost. I bumped into her somewhere near the back of the ship.'

The curl of his lip intensified. 'And what did she say?'

'Nothing,' I said hurriedly. 'Nothing. Just ... how to find my way back. That's all I asked her. That's all she said.'

'She's out of control,' he said, more to himself than me. 'Becoming trouble. Needs something doing to her.'

I sensed further questions would be unwise, bitterly regretting that I had raised the subject in the first place. At least the battle was still on-going, with no sign of any lessening in its intensity. Difficult as it was to look on that as any kind of positive development, at least it might force Zeal's mind onto other matters. If we had a rush of casualties, he might forget that I'd mentioned the girl at all.

Some chance, I thought.

We reached the observation bubble, Zeal silent and brooding at first. He pulled back a lever, opening an iron shutter. Beyond the glass, closer than I'd expected, was the other ship. It couldn't have been more than twenty or thirty kilometers from us.

It was another ramscoop, shaped more or less like the *Iron Lady*. We were so close that the magnetic fields of our scoops must have been meshed together, entangled like the rigging of two sailing ships exchanging cannon fire. Near the front of the other ship, where the scoop pinched to a narrow mouth, I could actually *see* the field: picked out in faint purple flickers of excited, inrushing gas. Behind the other ship was the hot spike of its drive flame: the end result of all that interstellar material being sucked up in the first place, compacted and compressed to stellar core pressures in her drive chamber. A similar flame would have been burning from the *Iron Lady*'s stern, keeping us locked alongside.

The other ship was firing on us, discharging massive energy and projectile weapons from hull emplacements.

'They must be pirates,' I said, bracing myself as the ship took another hit. 'I'd heard they existed, but never really believed it until now.'

'Start believing it,' Zeal grunted.

'Could that ship be the *Devilfish*?'

'And what have you heard about the *Devilfish*?'

'If you take the stories seriously, that's the ship they say does most of the pirating between here and the Frolovo Hub. I suppose if pirates exist, then there's a good chance the *Devilfish* does as well.'

The hull shook again, but it was a different kind of vibration than before: more regular, like the steady chiming of a great clock.

'That's us firing back,' Zeal said. 'About bloody time.'

I watched our weapons impact across the hull of the other ship, flowering in a chain. Huge blasts … but not enough to stop a wave of retaliatory fire.

'She's switched to heavy slugs,' Zeal said. 'We'll feel this.'

We did. It was worse than anything we had experienced before, as if the entire ship were being shaken violently in a dog's jaw. By now the noise from the klaxons and warning voices had become deafening. Through the window I saw huge scabs of metal slam past.

'Hull plating,' Zeal said. 'Ours. That'll take some fixing.'

'You don't seem all that worried.'

'I'm not.'

'But we're being shot to pieces here.'

'We'll hold,' he said. 'Long enough.'

'Long enough for what?'

I felt a falling sensation in my gut. 'That's our drive flame stuttering,' Zeal reported, with no sense of alarm. 'Captain's turned off our scoop. We'll be on reserve fuel in a moment.'

Sure enough, normal weight returned. The two ships were still locked alongside each other.

'Why's he done that?' I asked, fighting to keep the terror from my voice, not wanting to show myself up before Zeal. 'We won't be able to burn reserve fuel for very long without the scoop to replenish…'

'Scoop's down for a reason, son.'

I followed Zeal's gaze back to the other ship. Once again, I saw the hot gases ramming into the engine mouth, flickering

purple. But now there was something skewed about the geometry of the field, like a candleflame bending in a draught. The distortion to the field intensified, and then snapped back in the other direction.

'What's happening?'

'Her fieldmaster's trying to compensate,' Zeal said. 'He's pretty good, give him that.'

Now the ramscoop field was oscillating wildly, caught between two distorted extremes. The pinched gas flared hotter—blue white, shifting into the violet.

'What's happening to them? Why doesn't the fieldmaster shut down the field, if he's losing control of it?'

'Too scared to. Most ships can't switch to reserve fuel as smoothly as we can.'

'I still don't see...'

That was when the field instabilites exceeded some critical limit. Gobbets of hot gas slammed into the swallowing mouth. An eyeblink later, an explosion ripped from the belly of the other ship. Instantly her drive flame and scoop field winked out.

She began to fall behind us.

We cut our engines and matched her velocity. The other ship was a wreck: a huge hole punched amidships, through which I saw glowing innards and pieces of tumbling debris, some of which looked horribly like people.

'She's dead now,' I said. 'We should leave, get out of here as quickly as we can. What if they repair her?'

Zeal looked at me and shook his head slowly. 'You don't get it, do you? They weren't the pirates. They were just trying to get away from us.'

'But I thought you said...'

'I was having some fun. This was a scheduled interception—always was. It just happened a bit sooner than the captain told me.'

'But then if they're not the pirates...'

'Correct, lad. We are. And this isn't really the *Iron Lady*. That's only a name she wears in port.' He tapped a hand against

the metal framing of the bubble. 'You're on the *Devilfish*, and that makes you one of us.'

■ ■ ■

A week passed, then another. I learned to stop asking questions, afraid of where my tongue might take me. I kept thinking back to the girl in the corridor, and the cryptic warning she had given me. About how I should get off the ship as soon as possible, before Mister Zeal put machines in my head or the *bad thing* happened. Well, a bad thing had certainly happened. The *Iron Lady*, or the *Devilfish* as I now had to think of her, had attacked and crippled another ship. Her holds had been looted for cargo. A handful of her crew had managed to escape in cryopods, but most had died in the explosion when her drive core went critical. I did not know what had happened to the few survivors, but it could not have been coincidence that I suddenly noticed we were carrying three new lobots. I had played no part in converting them, but it would not have taxed Zeal to do the surgery on his own. I knew my way around his operating room by now; knew what was difficult and what was easy.

So we had murdered another ship and taken some of her crew as prize. Every hour that I stayed aboard the *Devilfish* made me complicit in that crime, and any other attacks that were yet to take place. But where could I run to?

We were between systems, in deep interstellar space.

Get off ship. Before bad thing happens.

Had she meant the attack, or was she talking about something else, something yet to happen?

I had to find her again. I wanted to ask her more questions, but that wasn't the only reason. I kept seeing her face, frozen in the corridor lights. I knew nothing about her except that I wanted to know more. I wanted to touch that face, to pull back that messy curtain of hair and look into her eyes.

I fantasised about saving her: how I'd do the bare minimum in Zeal's service, just enough to keep him happy, and then jump ship at the first opportunity. Jump and run, and take

the lobot girl with me. I'd outrun Happy Jack's button men; I could outrun the crew of the *Devilfish*.

But it wasn't going to be that easy.

'I've got a job for you,' Zeal said. 'Nice and easy. Then you can have the rest of the day off.'

'A job?' I ventured timidly.

'Take this.' He delved into his apron pocket and passed something to me: a gripped thing shaped a little like the soldering iron. 'It's a tranquiliser gun,' he said.

'What do you want me to do?'

'I want you to bring the girl back in.'

'The girl?'

'Don't try my patience, Peter.' He closed my hand around the grip. 'You know where she haunts. Find her, or let her find you. Shouldn't be too hard.'

'And when I've found her?'

'Then you shoot her.' He raised a warning finger. 'Not to kill, just to incapacitate. Aim for a leg. She'll drop, after a minute or so. Then you bring her back to me.'

He'd cleared the operating table. I knew from our work schedule that we were not expecting any more patients today.

'What do you want her for?' I asked.

'Always been a bit too chirpy, that one. She has a job to do ... a certain job that means she has to be brighter than the other lobots. But not *that* much brighter. I don't like it when they answer back, and I definitely don't like it when they start showing notions of free will.' He smiled. 'But it's all right. Nothing we can't fix, you and I.'

'Fix?'

'A few minutes under the knife, is all.'

My hand trembled on the gun. 'But then she won't be able to talk.'

'That's the idea.'

'I can't shoot her,' I said. 'She's still a person. There's still something left of who she was.'

'How would you know? All she told you was how to get back home. Or did you talk more than you said?'

'No,' I said, cowed. 'Only what I told you.'

'Good. Then you won't lose any sleep over it, will you?'

With gun in my hand I considered turning it on Mister Zeal and putting him under and then killing him. With the rest of the crew still alive, my chances of stopping the *Devilfish* (let alone making it off the ship in one piece) were practically zero. It would be a futile gesture, nothing more. Without Zeal the crew would be inconvenienced, but most of them would still survive.

I still wanted to stop them, but the gun wasn't the answer. And she *was* just a lobot, after all. She hadn't even remembered her name. What kind of person did that make her?

I slipped the gun into my belt.

'Good lad,' Zeal said.

■ ■ ■

I found her again. It didn't take all that long, considering. I kept a careful note on the twists and turns I took, doubling back every now and then to make sure the ship really wasn't shifting itself around me. That much had always been my imagination, and now that I was revisiting the zone where I had been lost before, it all looked a degree more familiar. Now that I had been given license to enter this part of the ship, I felt more confident. I still wasn't happy about shooting the girl … but then it wasn't as if Zeal was going to *kill* her. When so much had already been taken from her, what difference did a little bit more make?

I turned a corner and there she was. She wolfed vile-looking paste into her mouth from some kind of spigot in the wall, the stuff lathering her metal hands.

My hand tightened on the gun, still tucked into my belt. I took a pace closer, hoping she would stay engrossed in her meal.

She stopped eating and looked at me. Through the tangled fringe of her hair, eyes shone feral and bright.

'Peter Vandry,' she said, and then did something horrible and unexpected; something no lobot should ever do.

She smiled.

It was only a flicker of a smile, quickly aborted, but I had still seen it. My hand trembled as I withdrew the gun and slipped off the safety catch.

'No,' she said, backing away from the spigot.

'I'm sorry,' I said, aiming the gun. 'It isn't personal. If I don't do it, Zeal'll kill me.'

'Don't,' she said, raising her hands. 'Not shoot. Not shoot me. Not *now*. *Not now*.'

'I'm sorry,' I said again.

My finger tightened on the trigger. Two things made me hesitate, though. The first was: what did she mean: *not now*? What did it matter to her if I shot her now, rather than later? The second thing was those fierce, beautiful eyes.

My hesitation lasted an instant too long.

'Baby,' she said.

The gun quivered in my hand, and then leapt free of it with painful force, nearly snapping my fingers as it escaped my grip. It slammed into the wall, the impact smashing it apart. The metal remains hovered there for an agonising instant, before dropping—one by one—to the floor.

I looked on, stunned at what had just happened.

'Warn … you,' she said. 'Warn you good, Peter Vandry. Warn you … get off ship. Stay wethead. Soon *bad thing* happen and you still here.'

I pushed my hand against my chest, trying to numb the pain in my forefinger, where it had been twisted out of the trigger grip.

'The bad thing already happened,' I said, angry and confused at the same time. 'We took out a ship … killed its crew.'

'No,' she said, shaking her head gravely. 'That not what I mean. I mean *real bad thing*. *Real bad thing* happen *here*. Here and soon. *This ship*.'

I looked at the remains of the gun. 'What just happened?'

'She save me.'

I frowned. 'She?'

For a moment the girl seemed torn between infinite opposed possibilities.

'You try shoot me, Peter Vandry. I trust you and you try *shoot* me.'

'I'm sorry. I didn't want to … it's just that I need to keep on Mister Zeal's good side.'

'Zeal bad man. Why you work for Zeal?'

'I didn't have a choice. They tricked me aboard. I didn't know this was a pirate ship. I just needed a ticket off Mokmer.'

'What happen on Mokmer?'

'Bad thing,' I said, with half a smile.

'Tell.'

'A man called Happy Jack did something to my sister. I got even with Happy Jack. Unfortunately, that meant I couldn't stick around.'

'Happy Jack bad man?'

'As bad as Zeal.'

She looked at me, hard and deep and enquiring, and then said: 'I hope you not lie, Peter Vandry.'

'I'm not lying.'

She showed me her hands, giving me time to admire the crudity of their function, the brutal way they'd been grafted to her arms. 'Zeal did this.'

'I figured.'

'Once I work for Zeal. All go well … until one day. Then I make mistake. Zeal get angry. Zeal take hands. Zeal say "more use on end of machine".'

'I'm sorry.'

'Zeal got temper. One day Zeal get angry with *you*.'

'I'll be off the ship before then.'

'You hope.'

Now it was my turn to sound angry. 'What does it matter? There's nowhere for me to go. I have no choice but to work with Zeal.'

'No,' she said. 'You have choice.'

'I don't see that I do.'

'I show. Then you understand. Then you help.'

I looked at her. 'I just tried to shoot you. Why would you still trust me?'

She cocked her head, as if my question made only the barest sense to her. 'You ask me … what my name *is*.' She blinked, screwing up her face with the effort of language. 'What my name *was*.'

'But you didn't know.'

'Doesn't matter. No one else … ever ask. Except you, Peter Vandry.'

■ ■ ■

She took me deeper into the ship, into the part I had always been told was off-limits because of its intense radiation. Dimly, it began to dawn on me that this was just a lie to dissuade the curious.

'Zeal not happy, you not bring me in,' she said.

'I'll make something up. Tell him I couldn't find you, or that you tricked me and destroyed the gun.'

'Not work on Zeal.'

'I'll think of something,' I said glibly. 'In the meantime … you can just hide out here. When we dock, we can both make a run for it.'

She laughed. 'I not get off *Devilfish*, Peter Vandry. I die here.'

'No,' I said. 'It doesn't have to happen like that.'

'Yes, it does. Nearly time now.'

'Back there,' I said. 'When you did that thing with the gun … what did you mean when you said 'baby'?'

'I mean this,' she said, and opened a door.

It led into a huge and bright room: part of the engine system. Since my time on the ship, I had learned enough of the ramscoop design to understand that the interstellar gases collected by the magnetic scoop had to pass through the middle of the ship to reach the combustion chamber at the rear … which was somewhere near where we were standing.

Overhead was a thick, glowing tube, running the length of the room. That was the fuel conduit. With the drive off, the glass lining the tube would have been midnight black. Only a fraction of the glow from the heated gases shone through … but it was still enough to bathe the room in something like daylight.

But that wasn't the only bright thing in the room.

We walked along a railinged catwalk, high above the floor. Below, but slightly off to one side, was a thick metal cage in the form of a horizontal cylinder. The cage flickered with containment fields.

Something huge floated in the cage. It was a creature: sleek and elongated, aglow with its own fierce brassy light. Something like a whale, but carved from molten lava. Quilted in fiery platelets that flexed and undulated as the creature writhed in the field's embrace. Flickering with arcs and filaments of lightning, like a perpetual dance of St Elmo's fire.

I squinted against the glare from the alien thing.

'What…?' I asked, not needing to say any more.

'Flux Swimmer,' she said. '*Devilfish* found her … living in outflow jet from star. Didn't evolve there. Migrated. Star to star, billions of years. Older than Galaxy.'

I stared, humbled, at the astonishing thing. 'I'd heard of such things. In the texts of the Kalarash … but everyone always assumed they were legendary animals, like unicorns, or dragons, or tigers.'

'Real,' she said. 'Just … rare.'

The creature writhed again, flexing the long, flattened whip of its body. 'But why? Why keep it here?'

'*Devilfish* needs Flux Swimmer,' she said. 'Flux Swimmer … has power. Magnetic fields. Reaches out … shapes. *Changes.*'

I nodded slowly, beginning to understand. I thought back to the engagement with the other ramscoop; the way its intake field had become fatally distorted.

'The Flux Swimmer is the *Devilfish*'s weapon against other ships,' I said, speaking for the girl. 'She reaches out and twists their magnetic fields. Zeal always knew we were going to win.'

I looked down at the creature again, looking so pitiful in its metal cage. I did not have to read the animal's mind to know that it did not want to be held here, locked away in the heart of the *Devilfish*.

'They … make her do this,' the girl said.

'Torture?'

'No. She could always … choose to die. Easier for her.'

'How, then?'

She led me along an extension to the catwalk, so that we walked directly over the trapped animal. It was then that I understood how the crew exerted their control of the alien.

Hidden from view before, but visible now, was a smaller version of the same cage. It sat next to the Flux Swimmer. It held another version of the alien animal, but one that was much tinier than the first. Probes reached through the field, contacting the fiery hide of the little animal.

'Baby,' the girl said. 'Hurt baby. Make mother shape field, or hurt baby even more. *That* how it works.'

It was all too much. I closed my eyes, numbed at the implicit horror I had just been shown. The baby was not being hurt now, but that was only because the *Devilfish* did not need the mother's services. But when another ship needed to be destroyed and looted … then the pain would begin again, until the mother extended her alien influence beyond the hull and twisted the other ship's magnetic field.

'I see why the captain cut our field now,' I said. 'It was so she could reach through it.'

'Yes. Captain clever.'

'Where do you come into it?' I asked.

'I look after them. Tend them. Keep them alive.' She nodded upward, to where smaller conduits branched off the main fuel line. 'Swimmers drink plasma. Captain lets them have fuel. Just enough … keep alive. No more.'

'We've got to stop this ever happening again,' I said, reopening my eyes. Then a thought occurred to me. 'But she *can* stop it, can't she? If the mother has enough influence over magnetic fields to twist the ramscoop of a ship thirty kilometers away …

surely she can stop the captain and his crew? They're cyborgs, after all. They're practically made of metal.'

'No,' she said, shaking her head in exasperation—either with the situation, or her own limitations. 'Mother … too strong. Long range … good control. Smash other ship, easy. Short range … bad. Too near.'

'So what you're saying is … she can't exercise enough local control, because she's too strong?'

'Yes,' she said, nodding emphatically. 'Too strong. Too much danger … kill baby.'

So the mother was powerless, I thought: she had the ability to destroy another ramscoop, but not to unshackle herself from her own chains without harming her child.

'Wait, though. The thing with the gun … *that* took some precision, didn't it?'

'Yes,' she said. 'But not mother. Baby.'

She had said it with something like pride. 'The baby can do the same trick?'

'Baby weak … for now. But I make baby stronger. Give baby more fuel. They say starve baby … keep baby alive, but *just*.' She clenched her fist and snarled. 'I disobey. Give baby more food. Let baby get stronger. Then one day…'

'The baby will be able to do what the mother can't,' I said. 'Kill them all. That's the bad thing, isn't it? That's what you were warning me about. Telling me to get off the ship before it happened. And to make sure Zeal didn't put implants in my head. So I'd have a chance.'

'Someone … live,' she said. 'Someone … come back. Find *Devilfish*. Let mother and baby go. Take them home.'

'Why not you?'

She touched the side of her head. 'I, lobot.'

'Oh, no.'

'When bad thing happen, I go too. But you live, Peter Vandry. You *wethead*. You come back.'

'How soon?' I breathed, not wanting to think about what she had just said.

'Soon. Baby stronger … hour by hour. Control … improving.

See, feel, all around it. *Empathic*. Know what to do. Understand good.' Again that flicker of pride. 'Baby *clever*.'

'Zeal's onto you. That's why he sent me here.'

'That why … has to happen soon. Before Zeal take away … *me*. What left behind after … not care about baby.'

'And now?'

'I care. I *love*.'

'Well, isn't that heartwarming,' said a voice behind us.

I turned around, confronted by the sight of Mister Zeal blocking the main catwalk, advancing toward us with a heavy gun in his human hand: not a tranquiliser this time. He shook his head disappointedly. 'Here was I, thinking maybe you needed some help … and when I arrive I find you having a good old chinwag with the lobot!'

'Zeal make you lobot too,' she said. 'He train you now … just to build up neuromotor patterns.'

'Listen to her,' Zeal said mockingly. 'Step aside now, Peter. Let me finish the job you were so tragically incapable of completing.'

I stood my ground. 'Is that right, Zeal? Were you going to make me into one of them as well, or were you just planning on taking my hands?'

'Stand aside, lad. And it's *Mister* Zeal to you, by the way.'

'No,' I said. 'I'm not letting you touch her.'

'Fine, then.'

Zeal aimed the gun and shot me. The round tore through my leg, just below the knee. I yelped and started to fold as my leg buckled under me. By tightening my grip on the railings I managed not to slip off the catwalk.

Zeal advanced toward me, boots clanging on the catwalk. I could barely hold myself up now. Blood was drooling down my leg from the wound. My hands were slippery on the railing, loosing their grip.

'I'm trying not to do too much damage,' Zeal said, before levelling the gun at me again. 'I'd still like to be able to salvage something.'

I steeled myself against the shot.

'Baby,' the girl called.

Zeal's arm swung violently aside, mashing against the railing. His hand spasmed open to drop the gun. It clattered to the deck of the catwalk, then dropped all the way to the floor of the chamber, where it smashed apart.

Zeal grunted in anguish, using his good hand to massage the fingers of the other.

'Nice trick,' he said. 'But it'll only make it slower and messier for both of you.'

With both hands—he couldn't have been hurt that badly—he delved into the pocket on the front of his apron. He came out with a pair of long, vicious looking knives, turning them edge-on so that we'd see how sharp they were.

'Baby…' I called.

But Zeal kept advancing, sharpening the knives on each other, showing no indication that the baby was having any effect on his weapons. It was only then that I realised that the knives were not necessarily made of metal.

Baby wasn't going to be able to do anything about them.

Zeal's huge boots clanged ponderously closer. The pain in my leg was now excruciating; beginning to dull my alertness. Slumped down on the deck, I could barely reach his waist, let alone the knives.

'Easy now, lad,' he said, as I tried to block him. 'Easy now, and we'll make it nice and quick when it's your turn. How does that sound?'

'It sounds…'

I pawed ineffectually at the leather of his apron, slick with blood and oil. I couldn't begin to get a grip on it, even if I'd had the strength to stop him.

'Now lad,' he said, sounding more disappointed than angry. 'Don't make me slash at your hands. They're too good to waste like that.'

'You're not getting any part of me.'

He clucked a little purr of amusement and knelt down just far enough to stab the tip of one of the knives—the one he held in his right hand—against my chest. 'Seriously, now.'

The pressure of the knife made me fall back, so that my back was on the deck. That was when I touched it with my bare hand and felt how warm it was.

Warm and getting hotter.

Inductive heating, I thought: Baby's magnetic field washing back and forth over the metal, cooking it.

I twisted my neck to glance back at the girl, and saw her pain. She held her hands in front of her, like something expecting a gift. Baby must have been warming the hands as well as the deck.

Baby couldn't help it.

Flat on the deck now, Zeal lowered his heel onto my chest. 'Yes, the deck's getting hotter. I can just feel it through the sole of my shoe.'

'Don't you touch her.'

He increased the pressure on my chest, crushing the wind from my lungs. 'Or what, exactly?'

I didn't have the strength to answer. All I could do was push ineffectually against his boot, in the hope of snatching a breath of air.

'I'll deal with you in a moment,' Zeal said, preparing to move on.

But then he stopped.

Even from where I was lying, I saw something change on his face. The cocky set of his jaw slipped a notch. His eyes looked up, as if he'd seen something on the ceiling.

He hadn't. He was looking at his goggle, pushed high onto his forehead.

Nothing about the goggle had changed, except for the thin whisp of smoke curling away from it, where it contacted his skin.

It was beginning to burn its way into his forehead, pulled tight by the strap.

Zeal let out an almighty bellow of pain and fury: real this time. His hands jerked up reflexively, as if he meant to snatch the goggle away. But both hands were holding knives.

He screamed, as the hot thing seared into his forehead like a brand.

He lowered his hands, and tried to fumble one of the knives into his apron pocket. His movements were desperate, uncoordinated. The knife tore at the leather, but couldn't find its way home. Finally, shrieking, he simply dropped the weapon.

It fell to the decking. I reached out and took it.

Zeal reached up with his bare hand and closed his fingers around the goggle. Instantly I heard the sizzle of burning skin. He tried to pull his hand away, but his fingers appeared to have stuck to the goggle. Thrashing now, he reached up with the other knife—still unwilling to relinquish it—and tried to use its edge to lever the offending mass of fused metal and skin from his forehead.

That was when I plunged the other knife into his shin, and twisted. Zeal teetered, fighting for balance. But with one hand stuck to his forehead and the other holding the knife, he had no means to secure himself.

I assisted him over the edge. Zeal screamed as he fell. Then there was a clatter and a sudden, savage stillness.

For what seemed like an age I lay on the catwalk, panting until the pain lost its focus.

'It won't be long before the rest of the crew come after us,' I told the girl.

She was still holding her metal hands before her: I could only imagine her pain.

'Need to make baby strong now,' she said. 'Feed it more.' She moved to a console, set into a recess in the railing itself. She touched her claws against the controls, and then gasped, unable to complete whatever action she'd had in mind.

I forced myself to stand, putting most of my weight on my good leg. My arm was in a bad way, but the fingers still worked. If I splinted it, I ought to be able to grip something.

I lurched and hobbled until I was next to her.

'Show me what to do.'

'Give Baby more fuel,' she said, indicating a set of controls. 'Turn that. All the way.'

I did what she said. The decking rumbled, as if the ship itself had shuddered. Overhead, I noticed a dimming in the glow of the pipe after the point where the smaller lines branched out of it.

'How long?' I said, pushing my good hand against the slug wound to keep the blood at bay.

'Not long. Ship get slower … but not enough for captain to notice. Baby drink. Then … *bad thing*.'

'Everyone aboard will die?'

'Baby kill them. Fry them alive, same way as Zeal. Except you.'

I thought of all that the *Devilfish* had done. If only half of those stories were true, it was still more than enough to justify what was about to happen.

'How long?' I repeated.

'Thirty … forty minutes.'

'Then it's time enough,' I said.

She looked at me wonderingly. 'Time enough … for what?'

'To get you to the surgeon's room. To get you on the table and get those implants out of your head.'

Something like hope crossed her face. It was there, fleetingly. Then it was gone, wiped away. How often had she dared to hope, before learning to crush the emotion before it caused any more pain? I didn't want to know … not yet.

'No,' she said. 'Not time.'

'There is time,' I said. If I could extract those implants in time, and remove those metal hands, she would weather baby's magnetic storm when it ripped through the rest of the crew. There was nothing I could do for the other lobots, not in the time that was left. And maybe there was nothing anyone could do for them now.

But the girl was different. I knew there was something more in there … something that hadn't been completely erased. Maybe she didn't remember her name now, but with time … with patience … who knew what was possible?

But first we had to save the aliens. And we would, too. We'd have the *Devilfish* to ourselves. If we couldn't work out how to fly the aliens home, we could at least let them go. They were creatures of space: all that they really craved was release.

Then … once the Flux Swimmers were taken care of … we'd find a cryopod and save ourselves. So what if it took a while before anyone found us?

'No time,' she said again.

'There is,' I said. 'And we're doing this. You're my patient, and I'm not giving up on you. I'm Peter Vandry, surgeon.'

'Surgeon's mate,' she corrected.

I looked down at Zeal's spreadeagled, motionless form and shook my head. 'Surgeon, actually. Someone just got a promotion.'

On the Oodnadatta

He was staring into the distance, doing his best not to catch anyone's eye, but not wanting to sit scrutinizing his coffee like some *mestizo* kid avoiding trouble. Muller didn't especially care whether he walked into it or not. What he didn't like was finding it in a place where he hadn't yet sussed the pecking order; who he could and couldn't trust.

Luckily, enough was happening to justify his gaze.

Through the roadhouse's big window, twin-prop planes were coming and going from the adjacent airstrip. Trucks as well; the road trains came through here on their way to the Cadman stock stations strung out along the Birdsville Track, or south to Adelaide. In daylight, trailing plumes of dust, the trains seemed to take forever to come and go—but it was getting toward dusk now—the sky purple, washed by streaks of orange behind the mulga trees—and the trains only turned on their headlights near settlements.

'Wakey,' the man said, snapping his fingers in front of Muller's eyes. 'Cadman doesn't pay you to daydream, mate.'

The man was hatted, his wiry form almost lost in a checked zip-up jacket with a fleeced collar.

'Mr Rawlinson?'

The man decommissioned Muller's coffee dregs into a nearby pot plant. 'But you can call me Rawlinson. Got your gear, have you? There's a plane waiting for us. Some old girl's conked out on the Oodnadatta.'

Muller snatched his grip and toolkit from under the table. 'A road train?'

'Yeah, a road train. Not that we get much else out here, you know.' Rawlinson walked to the despatch desk and picked up a couple of dockets. 'Sign yourself out mate.'

Muller wrote his name carefully in the log book, Rawlinson looking over his shoulder. 'Juan Muller,' said the big Australian. 'What are you, some kind of mongrel? Had you down for a Kraut. Look like you've got a bit of Abo in you as well. No offence or anything.'

'I'm a Chilean,' Muller said, for what seemed like the thousandth time since arriving in Perth. 'Many of my countrymen have German surnames. As for my ancestry, I'm Mestizo, half-Indian.'

If any of that impressed Rawlinson he didn't show it. 'Got road trains in Chile?'

They walked out into the warm dusk air. 'Not road trains,' Muller said. 'But heavy trucks work the Pan American Highway. And diesel locomotives on the railway, hauling iron-ore and nitrates to Santiago. I have worked on many sorts of vehicle, Rawlinson; many kinds of diesel, gas-turbine and electric engine, as well as hydraulics, drag-lines, container derricks, tower cranes and robot clipper ships.'

'I didn't ask for your bloody curriculum vitae. What matters is if you can stick it out here working for Cadman.'

'The office in Perth seemed to think so.'

They were approaching a twin-prop, basking under the strip's floods, navigation lights pulsing.

'They also tell you we use trannies?'

'Trannies?'

Rawlinson popped a hatch on the side of the plane and slung his kit into the hold. 'Transients, mate. Cadman owns 'em, see? Well, not Cadman, exactly, but the slant conglomerate which owns Cadman. Worked with transients before, haven't you?'

'Not exactly.'

'What does that mean?'

'In Chile transients are uncommon, Rawlinson. We're still a very…' Muller hesitated, not wanting to make either himself or his countrymen sound backward. 'Conservative country.'

'C'mon, even the bloody Pope okayed them. I thought you lot were all bead-fiddlers south of Panama.'

Muller didn't feel like getting into this discussion, not right now. Instead, he just threw his grip in after Rawlinson's kit. 'It's not my job to deal with the transients, anyway. In Valparaiso I took many courses in mechanics, but not in psychology.'

'That doesn't matter. Out here a bloke just muddles through until he gets the hang of it. Experience is what counts, mate. Like this hat, see?'

Muller studied the dark thing on Rawlinson's head. 'Nice as pie when I bought it,' said the man. 'But too stiff. So I left it out on the Birdsville and let a few trains run over it. After that I liked it a lot better.'

■ ■ ■

They were aloft, just the two of them up front in the twin-prop's cabin. Rawlinson had slipped the despatch docket into the dash and the plane had done the rest, hauling itself airborne until it reached the point where its wings canted forward for level flight. Thirty minutes had passed, and now the moon was shining—illuminating endlessly parallel dunes which made it seem as if the plane was only a moth, hovering above a corrugated iron roof.

'Do Cadman's cows eat sand?' Muller asked.

'Of course they bloody don't. You should see this place after a good rainstorm. Overnight bloody wheat-field.' Rawlinson stubbed out his cigarette. 'Anyway, stop gawking and call up the dossier. We'll be landing in a few minutes.'

Muller unlatched a battered sleevetop and paged it open, scrolling until he found the file which held documentation on Cadman's fleet.

'Here's the rego,' Rawlinson said, handing him the despatch docket. Muller noted the number and scrolled down the dossier list, until he found the match. 'Mack, is it?'

'Mitsubishi. Gas-turbine.'

'All we need. Bloody Jap rigs can't take the dust, see.'

The despatch had been alerted when the train hadn't checked in at the Anna Creek station, on its way south with a full load of Cadman cattle. The train's navsat beacon put it 30 kilometres below Oodnadatta, but there was nothing about why it had broken down.

'Let's just hope it's a broken blade,' Rawlinson said. ''Cause the last thing I feel like doing is arguing with a tranny.'

'You argue with them?'

'Sweet talk 'em mate. Persuade them to get on with the job.' Muller felt the plane nose down, like there was suddenly too much wax in his ears. ''Course, sometimes I can't be bothered, or they just don't get the message. That's why we always carry a few spares in the back of the plane.'

'Spares?'

'Trannies, mate.' Rawlinson chuckled. 'Don't worry, you'll get used to it.'

Muller thought he could see the broken-down train some way ahead, perched on the edge of the Oodnadatta road, etched across the corrugated iron like a slug track. A red light on the instrument panel started flashing, synched with a piercing electronic tone. Muller had no more than a second to worry about it before Rawlinson leant over and flicked a switch, turning the light amber and silencing the noise.

'Nothing to worry about, Paco,' he said. 'Just the train saying hello.'

'Hello?'

'Checking us over.' Rawlinson excavated something from his nose, scrutinised it, then secreted it under the panel. 'Cadman

doesn't advertise it, but some of the trains'll defend themselves if they feel threatened.'

'Who'd attack a train?'

'Sons of Namatjira for one.'

Muller nodded. 'I read about the Sons in Perth. They have a complaint against Cadman?'

'They say his land overruns sacred ground; that it pisses off the local spirits.'

Muller was silent for a moment. 'Many of my countrymen would not dismiss such a claim, Mr Rawlinson. Do you believe in spirits?'

'Yeah, I believe in spirits. You go into any Abo settlement and you'll see spirits, Paco.' Rawlinson drew in breath. 'Trouble is they're mainly of the methylated variety.'

■ ■ ■

The poodle on Sapphire's lap was a glob of pink cotton-candy with eyes and a ribbon.

'Mummy's going away,' she said. 'For a long time. But you're to be very brave.'

She'd chosen to chill out; during what the LA MetNet's smartware called—within accepted error norms—the last optimal day of October 2008. If all went well, she would be revived on a similarly optimal day two or three decades down the line. By then, the Nanotopia would have arrived, and every day would be as near optimal as anyone cared. At least that was what she had read.

'I've called them,' Anton said, emerging from the darkness of the house onto the bright patio. He had been swimming before she asked him to phone the company. Now a black gown hung from his broad shoulders, bare feet leaving sickle-shaped prints on the patio, hair furrowed back from his brow in brilliant grooves. His shades were of a new form-adapting style that faintly disturbed Sapphire, resembling a slab of obsidian inserted in a convenient slot in his face.

'The Ultralife team will be here in a few minutes,' he said.

'You've alerted perimeter security?'

'Absolutely. Wouldn't do to shoot down their helicopter, would it.'

Fifteen years in LA hadn't dented Anton's English accent, still as hard and rectilinear as his sunglasses. Helicopter, he said—never chopper, or anything so crassly imprecise.

'Those Stingers were a good buy,' she said. 'Shame I never got to see them used in anger. But Mark was right. They did their job just by being there.' She glared into his shades. 'Congratulations. You've got superb taste in boyfriends.'

Anton smiled. 'Actually I spoke to Mark yesterday concerning some rather nasty little surface-to-air jobs the Arabs have got their hands on. Those Stingers are getting rather long in the tooth.'

'Out of date?'

'Mmm. Even the Arizona Buddhist Militia have them now. I think we should consider upgrading to Patriot II's.'

'Well, we wouldn't want the Arizona Buddhist Militia showing us up, would we.' She took a sip on her carrot juice. 'Whoever the fuck they are.'

'You always were ahead of the vogue, Sapphire. Defining it, even. Shame to give all that up now.'

'Listen, pardon the anachronism, but didn't I make it clear you have a blank cheque as far as maintaining the estate goes? I don't give a rat's hiney about the deals you and Mark cook up, as long as this place is still here in 30 years time.' She nodded beyond the veranda. 'And I don't want anyone developing those hills before I wake. I don't care who owns them now. You've got 30 years to buy them out, whoever they are. When they revive me I want to wake on this exact fucking patio, and I want the same fucking view, understand?'

'Perfectly.'

'Yeah, well maybe you don't. Read this.' Sapphire tossed Anton one of the U-life brochures. 'See what they say? There's no reason why deanimation and revival shouldn't be just like taking a little catnap.' She watched as the black facet of his glasses tracked over the glossy, like one of the security cams stationed around the perimeter. 'You don't even dream. It's just like a slow dissolve. You know what a slow dissolve is, Anton? Like in the vid for...' Sapphire

trailed off. She hadn't made a promo since Anton was wetting beds, but sometimes she forgot.

'Deanimation,' he said, amusedly. 'Calling it that makes it seem about as commonplace as colonic irrigation.'

'About which you undoubtedly know more than me, honey. But why should they call it anything else? They don't have to, not since '99.'

That, of course, was when everything had changed. Californian law had been amended then, making it legally unnecessary for anyone to be dead before they were prepared for chill-out. That legal wrinkle removed the need to even mention the 'd' word in any of Ultra-life's publicity material. In 1999 over a thousand deanimations took place; enough business to keep 20 corporate clones of U-life above water. By 2003—with thousands of the State's richest and middle-richest taking that route yearly—the LA Times even started a separate cryobituaries section. But Sapphire hadn't waited until that stampede; she'd signed up four years before—one of the first 10,000 to do so. Now it was nothing even remotely adventurous. Politicians were doing it. Even a few cosmetic surgeons she could name, and some actors who hadn't managed an unaired pilot since the 80s. Last month there'd been that lounge-bar pianist with the joke recording contract, his tacky farewell bash on the roof of the U-life building. She'd stolen the whole show, her first public appearance in two years; left the pianist sap crying into his pina colada and wondering if he'd crashed the wrong party. Fact was, if Sapphire wasn't already locked into it, she doubted she'd even consider deanimation now. Too damn unoriginal by far.

But, like they said, too late to stop now.

She angled her shades down on her nose and waited until she could hear the suppressed thump of the arriving U-life chopper, scudding safely over the de-armed Stinger missile cordon, over the stepped lawns and the bougainvillaea.

■ ■ ■

Muller watched things scurry away from the plane's enlarging shadow, strobe-frozen in the red and green ellipses cast by the

lights. There was a dead marsupial by the strip, a reptile feasting in its midst. A goanna, they called them. Muller had seen enough at the road-house. They weren't dangerous, but they hissed like devils, and could run surprisingly well. He wondered how they tasted—and, judging by the cuisine back at the roadhouse, wondered if he already knew.

'Bring the sleeve,' Rawlinson said, once they were down. 'Plug it into the rig, see if you can find out why she's stopped. And don't mind the fats—they always get noisy if the trains stop. They think it's the sheds.'

Muller nodded and hopped out, using his torch to find his way along the road train's side. There were three trailers hitched behind the Mitsubishi tug, each trailer a slatted box crammed with snorting Cadman stock. Muller did not want to put his face too close to the slats. He could sense the pressure of the animals without seeing them, as if all the cows in each trailer had congealed into a single swelling mass of dough behind the slats. Near the end of the trailer, the side-gate rattled, straining against chains and padlocks with each hoof kick. Muller knelt down each time he passed one of the couplings, angling the torch under the chassis.

'Power-link's ruptured here, Rawlinson,' he said, raising his voice above the cattle. 'Would that make the last trailer's brakes come on?'

'Nah. We strip out the failsafes before they ever leave the depot.' Rawlinson lit a cigarette. 'If we didn't, we'd have 'em shutting down on us every hundred yards.'

Muller weighed his words carefully. 'That doesn't sound especially safe, Rawlinson. If the rig had to stop suddenly, the whole string could jack-knife.'

He was thinking of a legendary jack-knife on the Pan American, where the road snaked its way through the Atacama foothills. A tanker had braked too hard to avoid a boulder which had come down in the middle of the road. With defective brakes on the trailer, the whole unit had dog-legged through 90 degrees, projecting the rear half of the tanker over the edge of the road. The tanker's contents had sluiced backwards, until

the weight dragged the whole truck over the edge. That was in 2011, back when most of the lines still used drivers. There'd been a shrine by the road ever since, a patiently-tended plaster house with plastic flowers.

'So what?' Rawlinson said. 'They're only fats, and there's nobody up front to worry about.' He gave Muller a boisterous slap between the shoulder blades. 'Now go plug that box in up front.'

The rig sat on a six-wheeled chassis, wedge-shaped prow ribbed with bent roo-bars. There were no windows, only a bulbous black projection on the roof which contained the road train's sensor systems and navsat gear, sticking forward like a dinosaur horn. Amber cherry lights turned silently above the prow. It looked mean, and the wheeze of the idling turb sounded like a prolonged bestial exhalation.

Muller flipped open the sleevetop port, spooled out the optical cabling and hooked in. A few moments later the road train's ID and diagnostics dribbled across the screen. The numbers were difficult to interpret, so Muller made the sleeve graph up a holo of the engine—lasered onto his eyes, so that the turb seemed to hover above his sleeve. He clipped the torch onto his belt, using his free hand to remove parts of the engine holo until the blades were visible. Monocrystal jobs, according to the spec, so it was highly unlikely one had shattered. But who knew what the dust out here was capable of, or what corners Cadman had cut.

But the blades were clean, not even running hot.

Muller checked the rest, but he'd known the turbine was sweet almost from the moment he'd heard it. The only reason it was running slow was because the driver had pulled over. Except, as he reminded himself, there was no driver. Only software—and even that wasn't really the case.

Rawlinson was kicking the tyres when Muller caught up with him on the other side of the train. 'Nothing crook, is there.'

'The rig's fine, Rawlinson. Mechanically, at least. I suppose that isn't what you wanted to hear.'

Rawlinson's moonlit form shrugged. 'When these mongrels blow a gasket they generally squirt a sick-note up to the navsat. This time there wasn't one.'

Muller nodded, having the uncomfortable feeling Rawlinson had been testing his competency. 'We should get her moving again, I think. Those cows don't sound very happy. You Australians like your beef more than Argentineans.'

'Beef?' Rawlinson made an odd spluttering noise, and Muller watched the orange firefly of his cigarette arc groundwards. 'You'd be lucky to squeeze a stock cube out of that lot.'

For a moment Muller wondered if his English had failed him—or at least failed Rawlinson. 'Are you saying Cadman's cows aren't for beef?'

'Not this consignment, Paco.' Rawlinson knuckled the slats, seemingly oblivious to the overpowering bovine stench which erupted between them. 'Comes down about twice a week. Looks like all the others, except the serial number on the docket's different—and they always plane us out to fix one of these first, even if there's a regular consignment going green somewhere else.'

'Then all the other trains carry—' Muller hesitated, knowing that what he was about to say would sound ridiculous. 'Beef cows?'

'Yeah.'

Muller hesitated on the threshold of his next question, again wondering if Rawlinson was testing him. 'Then what are these cows for, if they aren't for eating?'

'They're pregnant.'

'Ready to calf?'

Muller caught Rawlinson's amused squint. 'Yeah, Paco. Ready to calf. Which is why we have to get this Jap shit moving again. Wouldn't want 'em popping before Adelaide, would we.'

Muller heard the side-gate rattle again, amazed it had lasted until now without breaking. 'You think the problem's with the transient, don't you.'

'You get a nose for these things,' Rawlinson said, implying it was a skill Muller would likely never acquire. 'You got the dossier handy? Call up the doco.'

He meant the biography of the transient currently driving—or not, as it happened—the Cadman road train. Muller worked the sleevetop and found it in a few seconds. 'What do you want to know?'

'Who we're dealing with would be a start.'

He meant the transient's name. 'Blaine Dubois,' Muller said, nodding. 'Do you know this one?'

'Sure I do. Put him in myself.' Rawlinson levered up his hat and scratched at the wire wool beneath. 'Went under in about 2008, right?'

'You have a good memory, Rawlinson.'

'You don't forget a name like that in a hurry. Piano player or something. Shirt lifter, probably. Must have made a bob or too as well. Anyway, most of Cadman's trannies come from '08. There were more in that year than in the five before. 'Course, there were hardly any from '09.'

'The Big One,' Muller said wistfully. 'I remember hearing about it as a child, when I came home from school in Mendoza.'

'They teach you to read at your school?'

Muller frowned. 'Of course.'

'Then hit that fucking scroll button. Don't want to stand around here all night.'

■ ■ ■

One thing about U-life; they didn't piss around.

Sapphire watched their chopper execute a faultless landing on the asphalt; crew drop and immediate dust-off, as if the pilot had logged hours inserting infiltration squads into Central American rainforest. Which, she supposed, was quite probable. And wouldn't that be a pisser: it was only 20 years since she'd recorded a particularly sanctimonious track for that album protesting against US involvement in Nicaragua; the one with the overproduced

sing-along finale. Right now the chopper was bottle-green, with a big Egyptian eye painted on one side, camouflaged as the traffic-monitoring chopper of a fictitious LA television station. But Sapphire knew from the brochure that if she wished, the pilot could throw a switch in his cockpit and the chopper's smart paint-pixels would immediately flick over into the U-life corporate colours. Depended on exactly how much publicity she wanted.

None, was the short answer.

Maybe if all this was a year or two ago … or if her dickbrained hippie parents were still around and she could still aggravate them in public, or if her career wasn't stalled in some kind of terminal power-dive…

The team-leader was flattening his hair back down, ruffled by the downdraught from the chopper. He was the only one wearing a suit; a vile electric pink she wouldn't have inflicted on a poodle. His chin jutted, making it seem as if he was constantly clenching his teeth. Four green-coated cryomedics came behind, one pair lugging a gurney, the other two weighed down with chunky plastic boxes, sprouting dayglo plastic pipes and digital readouts, emblazoned with medical decals. They looked like kid's toys made fractionally too large. Anton was down there to meet them, ushering them in out of the sun, into the house's hangarlike coolness. A few moments later she heard them pattering up the stairs.

By now the U-life chopper was loitering over the San Bernadino freeway, just one more hovering speck of grit in the chocolate caul of late afternoon smog.

'I'm Leitner,' said the suit. 'Pleasure to finally meet you, Sapphire.'

She winced. The drawback with only having one name—great for product placement, but there was no way anyone could address you without sounding like you'd been intimate for years. Not unless they were exceptionally skilled in nuance, the way they said the Chinese could make one word mean eighteen different things.

'Sure, honey, and I bet you've got all my albums. Can we get this shit over with?' She tilted down her sunglasses. 'And haven't I seen you somewhere before, recently?'

The guy took that as some kind of compliment, probably. Best not to let the poor sap know it was his chinny-chin-chin which she remembered.

'I was at the Dubois party,' Leitner said. 'We handled his departure arrangements as well.'

'You supposed to disclose that kind of thing?'

'What's to disclose? Mr Dubois made no special provisions.'

'Guess he didn't. Probably took the cheapest deal you had on offer, right? The budget special.' She made a chopping motion across her throat. 'Head only. Or what is it you guys call it? Neural consolidation?' Sapphire's laughter raced away toward the hills. 'Great. Kills me every time. What do you call someone with no body? Corporeally challenged?'

'We don't do neurals,' Leitner said, not hiding his distaste. 'They weren't good for business; at least not the kind of business we like.' Then he nodded to his four assistants, the guys with the gurney and the Fischer-Price doctor's kits. 'Maybe we should get to work.'

■ ■ ■

Muller glanced over the remainder of the tranny's sparse biographical data while Rawlinson played a cattle prod through the slats of the rear trailer, making the fats jump around and snort even more than usual. Like the man said, Dubois had gone into cryogenic preservation in 2008, a year before the Big One hit Southern California. The company which had frozen him, Ultra-life, had gone to great lengths to insulate their clients. Their cryogenic vaults had been mounted on electromagnetic shock-absorbing bearings to smother the worst effects of any quake, and each had carried its own six month backup radioisotope generator, capable of supplying juice to the refrigeration unit even if the rest of LA went back to the Flintstones. Which, indeed, had almost been the case. The quake had been bad enough in its own right, but then the *Chernorange* meltdown had happened.

Still, there was too much real estate there to go begging. In the end it had been the Greater Singaporeans who cleaned up

most of the mess, and the Greater Singaporeans who eventually unearthed the Ultralife cryogenic vaults. Lacking either the rights of the living or the sanctity of the dead, the legal status of the frozen had been murky to say the least. While best legal expert systems money could buy were locking antlers in cyberspace, the Singaporeans quietly spirited the frozen out of the country.

A year later everyone had forgotten about them. But they hadn't been lost. They were waiting in a vault a mile beneath Singapore, until technology and—by necessity—economics, progressed to the point where they could be revived.

In the end, technology got there first. And by then, Greater Singapore happened to own most of Australia.

■ ■ ■

For a long time Sapphire experienced nothing.

There was no sensation, no low-level consciousness, not even dreams. But somehow—when the nothingness ended—Sapphire felt as if she had come through something which had lasted for a longer period of time than she could easily name. It was like slipping a cassette into a VCR, and waiting through an eternity of static before the copyright notice scrolled up, except there was a complete absence of cheesy music.

The first thing she experienced—and for several years the only thing—was the time. Rendered in big red letters, like the digital face of an old bedside alarm. It appeared to be the only thing in her universe; floating less in blackness than in a limbo of nonexistence. She could neither ignore nor look away from the clock, and she found it virtually impossible to imagine anything lying beyond the clock, or around it. Sapphire wasn't stupid, so it didn't take her too long to figure out that the clock was being projected into her brain; all extraneous data carefully filtered from her sensorium.

For some time she was aware of the clock, without actually registering what it told her. But gradually—it was impossible to guess after how long—Sapphire took notice of what the clock was saying. It ought to have been shocking, except in her present state Sapphire

was really not capable of being shocked. What she experienced was more a feeling of mild perturbation.

She'd gone under in 2008. Now—according to the clock—it was 2024. And she'd barely had time to deal with the unreality of that before the final digit in the year incremented by one, and it was 2025. A little while later, 2026. The months were slamming past, and the pair of digits which counted the days of each month were locked in a perpetual blur. It looked corny, like the old movie cliche of the fluttering calendar pages or the rushing train wheels.

Except this was real, or at least she assumed so.

But it hadn't been in the contract, not as far as she remembered. According to Ultralife's publicity material, Sapphire was not meant to experience anything at all during her chill-out. Maybe a few odd sensations during the immediate pre-revival period (they were just covering their backs on that one, as no one had actually developed the technology) but nothing like this.

It was 2028 now. But dammit if something hadn't changed. The blurring day-digits were still changing illegibly fast, but the months did not seem to be changing quite as rapidly. More than that, the gap between the years seemed to be lengthening, slowly but surely. Sapphire watched—not so much fascinated as totally compelled—as the year became 2029, and then—slowing perceptibly now—2030. By 2031 the rate of slow-down was steepening. She could make out individual days now, and she felt a perverse stab of loss as her birthday whipped past, uncelebrated.

By 2032 time was positively crawling. By late May the days were changing at a subjective rate of only one every ten or so seconds (whatever that meant), and the rate seemed to have stabilised. In early June the clock changed, gaining detail which had not been present before. No longer just a sequence of hovering red numerals, it had gained a body, encased in wood-effect plastic, with little fold-down legs. A perfectly realised digital alarm-clock, floating in limbo. In mid June the clock receded, until the face was only a quarter of its previous size. Smoothly a whole room bloomed into existence around it. The clock lay on a bedside table, next to a vase of flowers. Autumnal sunlight slanted through the room's one window, teased and filtered by trees moving in a soft breeze.

It looked like a private room in a hospital; comfortable but not exactly opulent. Vaguely out-of-date as well. There was a television at the foot of the bed, on a grey metal cantilever. The whole obsolete unit was surrounded by the same wood-effect plastic as the alarm clock.

The television came on.

■ ■ ■

'Shit,' said Rawlinson.

Muller heard the metal bolts snap like a series of rifle shots, almost too close together to separate in his head. Then there was a squeal of tortured metal as the train's slatted side gave way, folding down against the pressure of the fats behind it like a collapsing dam wall. What followed was a tidal surge of half-tonne animals; cows pouring from the innards in a single brown torrent. It was only then that Muller understood how densely those cows had been packed into the train. The force was released with such suddenness that the first three or four animals did not have time to jump down before they were overwhelmed by the bovine tsunami pushing behind them. They simply fell out, and disappeared under the blurred hoofs of the other cows. Above the echoing thunder, Muller heard a cacophony of snorting and—faintly—something else. The something else was a sound he had not expected from animals like this: a kind of squealing or crying. If he had not known otherwise it might have struck him as human.

Rawlinson had gotten himself out of the way just in time, and was now making a futile attempt to stem the flood with the cattle prod, an activity whose sole outcome seemed to be that of making the escaped animals even more furious and panicked than before.

Muller glanced at his watch. Now, he thought, was as good as time as any to do what he had come to do, and the cows would provide an excellent diversion.

He reached into his jacket pocket, removed a handphone and punched numbers.

■ ■ ■

The television showed some kind of logo for a moment, but not one Sapphire recognised. Then she was looking at a suit, looking at her from behind a desk, hands clasped solemnly before him. The guy was in his 60s, but pretty well-preserved; good tan. Did she know him from somewhere? The general air of paternalistic over-sincerity he exuded reminded Sapphire of a presidential address. Maybe the guy was about to tell her they'd nuked some towel-heads.

'Sapphire,' he said. 'My name is Mr Leitner—you remember me, don't you? I was there when we put you under, back in '08.'

'Yeah, I remember you.' She was only mildly surprised that speaking came easily. Every other detail seemed to have been taken care of so it would have been odd if they'd skimped on something so basic. 'Since when did you get the chin straightened out?'

'A long time ago, Sapphire.' He smiled, almost as an exercise in demonstrating the remodelled skeletal structure of his jaw. 'And I'd love to talk about old times, but I'm afraid there's something of a…' Leitner deliberated. 'Shall we call it a crisis, or is that too strong?'

'Better tell me what it is first. Am I still frozen, or what?'

'Definitely,' Leitner said. 'But it isn't as simple as that. There've been a few changes since you went under—things that weren't foreseen in any of the scenarios.'

'So lay it on me.'

'Not enough time to go into any real detail.' The guy nodded out of the television, toward the alarm clock. 'What's happening, Sapphire, is that we're running a model of your brain in a supercomputer.'

'Running a model?'

'Simulating your brain. We took your frozen head and scanned it with some fancy new equipment; stuff that can map where all your brain cells are and how they're wired up to each other. Then we took all that information and fed it into the computer, and the computer allowed the model to evolve forward in time.'

'And?'

'There is no 'and', Sapphire. You're it. You're the model, right now.' Leitner smiled. Behind him, a corporate picture window

framed big skyscrapers crowding into the distance; architecture soft and melted like warming ice sculptures. 'We got you scanned back in 2020,' he said. 'But until recently the computer power was so slow that it took months to progress you by just a few subjective seconds. Eventually we had enough spare capacity to start feeding some sensory stimulus into the model, but it was still godawful slow. But things hotted up in the late 20s. By 2032 we'd ported you to one of the new quantum liquid-architecture systems, which meant we could begin to simulate you at a rate only a few hundred times slower than realtime; peanuts in computational terms. By June, we'd gained enough spare capacity to simulate a full environment.'

Sapphire had taken all that in, but it hadn't quite percolated down to understanding. 'Let me get this straight,' she said. 'What I'm feeling now—what I'm thinking now—is all going on in some fucking computer somewhere?'

'Jakarta, actually.'

Sapphire sniffed. 'The least you could have done is simulate me somewhere I haven't been before. I'm amazed I don't feel more pissed about it. I threw televisions out of hotel rooms for less than that.'

'Emotional responses aren't well modelled by the system,' Leitner said. 'Too much messy biochem. We're working on it, but it's all a bit wire-frame at this stage. Think of emotion as being the texture of your modelled mindstate. Our simulation resembles early virtual reality in that respect—very plasticky.'

'Like your hair, Leitner. And what about my frozen head anyway—I hope to god it's still intact, or I'm going to sue your asses for every fucking … whatever it is you spend in Jakarta.'

'Your frozen body is…' Leitner paused, scrutinised his interlocked fingers. 'Currently intact. But I'm afraid that's why I'm talking to you now. The situation isn't optimal.'

'What situation?'

'The legal status of your body. After the big one, Ultra-life ceased to exist in the sense that you knew it. Your frozen body, and those of our other clients, were corporate assets. After a number of corporate transactions—all very complicated—the frozen had become someone else's property.'

'You're losing me there. What the hell was the big one?' Sapphire hesitated a moment. 'No, don't bother. I can guess.'

Leitner put up a hand. 'You can catch up on the details later—there'll be plenty of time for that. First we have to clear a small technical matter.'

■ ■ ■

Rawlinson showed Muller the hatch in the side of the road train's rig where the transient modules were inserted. After the dust cover had slid back, they had to enter a ten-digit authorisation into a keypad, then undergo a retinal laser-scan. Then the inner door whirred aside, exposing the module, which was not much larger than a stack of cards; a blue LED pulsing in its end.

'That's our boy,' Rawlinson said. 'Doesn't look like much does it?'

'It's working, isn't it?'

'Oh, he's in there. Just doesn't want to work any more.'

Muller began to undo the sleevetop, ready to pass it to the other man. 'You said you'd try and persuade him.'

'I did, didn't I.' Rawlinson still had the cattle-prod in his hand, and Muller got the impression the man would much rather return to the task of agitating the animals. But with a long-winded sigh he entered a few more digits into the keypad, causing a little screen to light up next to the module.

They were looking down on a man.

The man was curled up foetally, in the driving seat of a rig; hard Australian sun blasting in through the windows.

'Hey, Blaine,' Rawlinson said. 'What do you think you're playing at, stopping this consignment?'

For a long time there was no response from the man in the screen. Then—slowly—he uncurled himself and looked at them, his face pitiful in the harsh glare. 'I can't go on,' he said. 'I can't go on, Mr Rawlinson. I can't do this any more.'

'This isn't any old load of cows, you know.'

'I know what the load is, Mr Rawlinson. That doesn't change anything. I just can't do it any more.'

'There's a word for that, Blaine. Forfeiture. You know what that means, don't you.'

'Perfectly.' The man's voice was utterly drained of emotion. 'I renege on the contract to pay for my recorporeality. And since I'm not currently over-burdened with human rights, you may legally erase me.'

Rawlinson nodded appreciatively. 'That's about the size of it. At this point I'm s'posed to remind you of just what's at stake … but frankly I get the impression I'd be wasting your time and mine.' Then he turned to Muller. 'Tell you what, Paco. Get some practise in. See if you can't talk this old girl into finishing the job. But don't raise your hopes.'

When Rawlinson was out of earshot Blaine Dubois said: 'I'm safe, aren't I? You promised me I'd be taken care of.'

'You're safe—no one's going to erase you.' Muller reached up with one hand, ready to eject the module, but then hesitated. 'You could still finish the job, you know. It depends on how badly you want to live again.'

For the first time the transient laughed. 'Not this badly,' he said.

■ ■ ■

'Go on,' Sapphire said, thinking that Leitner sounded like one of her old accountants from the 90s, before the software replacements came on the market.

'The firm that now oversees your cryogenically frozen body does things differently than Ultralife. And as your legal ties with the new provider are…' Leitner bit his lower lip. 'Unclear … they're at liberty to cut certain basic provisions from the terms of contract.'

'Meaning what?'

'Meaning they want to save money by going for full neural consolidation. Are you following me Sapphire?' The slick bastard staring at her out the television, like he was proposing nothing more innocuous than a moderate adjustment of her royalties scale.

'Yeah,' she said. 'I'm following you. You're saying they want to cut my head off, right?'

'Per unit cost, it's cheaper than full-body jobs. Of course, that wasn't Ultralife's way of doing things—but we're under new management these days.'

'Yeah,' she said. 'And isn't it always the same old same old.'

'If there were any other way…'

'Well, obviously there isn't, so why don't you just get the thing over with? Shit, I don't know why you even bothered consulting me. Like I'm gonna refuse, right?'

'It's called courtesy,' Leitner said.

So, of course, they did it—and Sapphire felt nothing, because she was no longer in her head. They even let her watch the procedure on a visual feed into her computer-simulated mind. It was unpleasant, but not because of what they did—rather because of what had become of her body since she went under. It didn't look right; all bruised and shrivelled and ruptured, like one of those guys they occasionally dug up in Siberia; like she'd been encased in a glacier for a few thousand years. She understood that every cell in her body had been ruined by expanding ice crystals, and that, while the requisite nanotechnology existed to repair each of them, it was far too expensive and laborious to actually do.

Later, when the company said it was going to have to destroy her head as well, she felt nothing but the sense of relief one might get from clearing out an attic of familial junk.

But that wasn't the end of it, not at all.

▪ ▾ ▪

'Help me with these bloody cows, you mongrel,' Rawlinson was saying, his voice cutting above the bellowing and the still-present squealing like a badly-oiled chainsaw. 'We've lost a few, but if we can get some of the others back aboard we might be looking at a bonus.'

Muller sauntered toward the train's rear. 'I had to erase the transient,' he said, patting the bulge in his shirt pocket. 'You were right about him.'

'Didn't have the balls for the job,' Rawlinson said. 'Funny thing is, fewer of 'em do these days. They say it's the speed of the new architectures. Makes a little job go a long, long way. Did you get the replacement tranny from the plane?'

'I thought I'd let you show me the installation procedure.'

'Nothing to it. Just slot 'em in and give the introductory pep-talk. They already know the basics by the time we get 'em.' But then the man trailed off, and his gaze was sweeping the horizon off to one side of the Oodnadatta trail. 'What the hell are those lights?'

'Vehicles, I suspect,' Muller said, but so quietly that Rawlinson didn't hear him.

In any case he didn't have long to wait. For a moment the cars were just indistinct dark shapes somewhere beyond the closest fringe of mulga trees, and then they erupted forward, engines surging, mercury lights scything the air, casting bright ellipses along the slatted side of the train.

'It's them,' Rawlinson said.

'Them?' Muller said, feigning ignorance.

'Sons of bloody Namatjira. I told you they've been raiding Cadman's trucks.' Rawlinson threw down the cattle prod, seemingly giving up on the task of rounding up the remaining loose animals. It would have been futile in any case: most of the cows which were capable of moving had bolted in terror into the night at the first sign of the cars, and the others were either dead or dying; those which had been crushed in the first stampede; dark shapes around the broken trailer like so many beached whales. But, thought Muller, did beached whales squeal like that? Did beached whales cry? Rawlinson had said the cows were ready to calf … but could even calves explain that awful threnody?

He didn't have time to worry about it. The vehicles belonging to the Sons of Namatjira had formed a circular corral around the road train, prowling in low gear. Most of the cars were pick-ups; four by fours prognate with roo-bars.

Rawlinson had reached the plane. He opened the side hatch and reached deep into it, emerging with something that Muller at first took for a crowbar. But it wasn't.

Rawlinson hefted the rifle, slipped a round into the chamber and fired it into the sky.

'I'm not sure that's legal,' Muller said, while the circling vehicles slowed to a halt.

'So sue me, Paco.'

'In any case, I'm not sure the Sons are greatly impressed.'

He was right. Things were moving now, although the combination of gloom and glare made it hard to tell precisely what. Figures, certainly—dressed in fatigues and balaclavas. Muller caught the occasional glint of pale flesh. Although the Sons were nominally an Aboriginal terrorist group, he'd heard that they'd recruited numerous specialists and observers from other paramilitary organisations around the world, and in the melange of voices which carried across the night he heard accents of German, Israeli, Dutch...

But the Sons came no closer, and they were too far away for Rawlinson's elephant stopper. Instead, darker, sleeker shapes emerged from the corral, loping across the ground, or, Muller realised, not so much loping as bounding, springing. He knew what these animals were. It was what he had seen the goanna feasting on when the plane landed. Marsupials. Kangaroos, specifically.

Or what once had been kangaroos.

Each of the hapless animals had been converted by the Sons's rogue bio-engineers into cybernetically-enhanced terrorist devices. Muller had heard about these creatures in Perth; how they were called *mangaroos* because the rogue bio-engineers tended to be nervy Japanese kids who'd read too many comic books. It was, of course, an awful long way from the simple nervous system of a roach to the intricate, messy mind of a marsupial ... but then again, the bio-engineers hadn't had to worry about funding or ethics committees. It was garden-shed cybernetics.

Each mangaroo wore night-vision goggles, its limbs and chest cased in sheets of articulated kevlar. Fibre-optic cables erupted from the back of each mangaroo's head and vanished into a matte-black control backpack. Most of the animals carried

a specially-modified machine-pistol, buckled around one forelimb. The other arm—or in some cases both arms—ended in curved carbon-steel scythes. Some of the mangaroos even had missiles or the long gunmetal tubes of grenade-throwers projecting over their backpacks.

And they were bouncing closer.

* * *

'You want the good news or the bad news?' said Leitner. 'Well, okay, let me tell you. The good news is we can get you back into a body again. The bad news is, someone has to pay for it.'

The conversation they were having was happening much faster than realtime now. Computational speed had increased to the point where Sapphire's neural processes could be simulated more rapidly than those of a flesh-and-blood brain. Did this mean that certain details were being skimped? She didn't know; no one was prepared to tell her, and after a while it had stopped being of any great concern. After all, wasn't this what everyone actually wanted?

'Just so long as it isn't the one you thawed already,' Sapphire said. 'And that goes for the head as well. That's one model I'm trading in.'

'You probably know about cloning,' Leitner said. 'Bit of a taboo subject these last few decades, even though the basic principles of mammalian cloning were established last century. But what with the recent upheavals...'

'You're saying you can grow a new body from my old cells, is that it?'

'Half the trick, yes—and probably the easiest half actually.' Leitner sounded convincing, but it was really a simulation of Leitner, synchronised to match Sapphire's computational rate. 'What's harder is putting you back in—your neural patterns. Very tricky procedure—and very expensive too. Only slightly less costly than rebuilding your old body cell by cell.'

'So why not do it that way, if the expense isn't so different?'

'Because it wouldn't be you, would it? Not unless we found a way of putting back all the memories you've accrued since we

consolidated you. And if we're going to go to that trouble, we might as well begin with a blank canvas.'

She could see the logic—almost. 'You're saying I've got to wait until you've grown an adult body? Leitner, have you any idea how slowly time passes here?'

'Actually,' he said, 'that isn't quite the problem you think. We can grow an adult body in months now—provided you're willing to pay for it, of course.'

■ ■ ■

The mangaroos never used the worst of their weapons. Even the rifles they used with discretion, peppering the last of the trailers, the one which the fats had already vacated. They put a few holes in the tug, but not enough to do serious damage—and they were careful not to get too close. Muller remembered what Rawlinson had said about the road trains being able to defend themselves. The defensive systems had been neutralised by the plane, and that was why the Sons had been able to get as close as they had. But evidently—at the back of their minds—was the fear that the defensive systems would come back on-line, triggered by some automatic cut-in they had never anticipated.

Of course, Rawlinson wasn't saying much at all at the moment. What he was doing was lying by the road side, moaning and pawing at his thigh.

'I told you shooting at them wasn't a good idea,' Muller said, inspecting the wound. 'Did you expect you could take out enough of them before one of them got you?'

Rawlinson stopped moaning for a moment, like a radio being tuned off-channel. 'Who the hell are you, Paco?'

'Exactly who I said I am. A Chilean who arrived in Perth.'

Muller paused, knelt down and picked up something from the ground—something long and metallic. For a moment he only held it, half aware out of the corner of his eye of the nearing Sons, who were advancing behind their animal accomplices.

'You're in with these bastards,' Rawlinson said. 'You're in with the bloody Sons, aren't you?'

'Not really,' Muller said, still holding the cattle prod. 'They contacted me in Perth, asked if I might assist them in a modest way, and for that they'd find me a good job on the west coast—something more suited to my skills than working on these wrecks.'

Now another voice rang out, female, amplified.

'His involvement with us was really very limited, you know. We wouldn't want to overstate it.' And the Son who was speaking paused to rip off her balaclava. She was black, with high, regal cheekbones catching the moonlight. Her accent, now that Muller paid proper attention to it, was French, although it was very slight. 'Which isn't to say that we aren't grateful.'

'You rigged this breakdown,' Rawlinson said.

'My, aren't you quick. How else were we expected to get close to one of your vehicles, unless you kindly disengaged the defence systems for us?'

Rawlinson said: 'One more time, Paco—how much did you know?'

'Less than you think,' the woman said. 'We arranged that Muller would arrive at the roadhouse not long before the next special train was due to start for Adelaide. When we arranged a breakdown, Muller was guaranteed to be on the repair team.'

'You arranged a breakdown?'

'One of our specialists hacked into your train and had a chat with Mr Dubois,' the woman said.

'The tranny.'

Muller reached into his shirt pocket and tossed the woman the module. 'I promised him you wouldn't erase him.'

'We won't,' she said. 'Though not being erased is the best we can offer him.' Then she said: 'Dubois was helpful, of course. In his state of mind he was rather open to suggestion. And he had a grudge of his own he wanted settling, which we said we'd be able to help him with.'

This was news to Muller. 'A grudge?'

'Concerning a woman called Sapphire. It was all rather tawdry—and he wasn't making a great deal of sense—but it seems that this Sapphire woman rather spoilt his exit from the living—upstaged his farewell party, I believe. He's been brooding on that ever since; especially after he learnt she was in the same predicament as him.' The black woman shook her head, as if none of this made any sense to her but she was only relating it for everyone else's benefit. 'So we asked our hacker to arrange for Sapphire to end up working the same miserable contract as Mr Dubois. He didn't have the heart to suggest something worse, but neither could he bear the thought of her getting off lightly.' Now she smiled; the whiteness of her teeth sudden in the darkness. 'So it's all worked out splendidly. All that remained then was for Muller to arrange a distraction to mask our approach, and give us the word.'

'I didn't even have to arrange one,' Muller said. 'You did that perfectly well yourself, Rawlinson. Incidentally, I think you'll live—the bullet only grazed you—it looks worse than it is. At least I think it does.'

'Up yours, Paco.'

The woman turned to one of the other Sons. 'Get it bandaged, then load this gentleman into the rear trailer. He'll get all the attention he needs when he arrives in Adelaide—if he lasts that long, of course.'

Rawlinson seemed to take that as a cue to start moaning again, but it sounded false, like the tantrum of a demonstrative child. Muller toyed with the cattle-prod and, for a moment, considered touching the electrified end against his partner. He had seen the effectiveness of the prod against the escaped fats, and—while his knowledge of bovine physiology was limited—he was prepared to believe that cowskin was possibly less thin than the organ enveloping Rawlinson. He wondered what kind of squeal the man would emit; if in fact he was able to emit any sound at all.

And then Muller remembered the other squealing; the noise he had heard when the first few animals had spilled from the trailer and been trampled by those following them.

'What is that?' he said, addressing everyone present simultaneously. 'That noise, like crying?'

■ ■ ■

So they told her how it worked.

Economics, that was it. The one aspect of the world which hadn't changed at all. Nothing came for free, most especially not the afterlife.

Cloning her body and growing it to adulthood wasn't going to be especially expensive, Leitner said. Only a few years ago it would have been, because even when all the genetic manipulation was done, you still had to pay someone to be a surrogate mother, and the prices for that had gone through the roof. Artificial wombs had been tried with only moderate success; since it was incredibly hard to even approximate the biochemical environment of a living womb. The question of bringing clones to term in other clones was an ethical minefield, which really left only one option.

■ ■ ■

'My God,' said the black woman. 'You don't know what any of this is about, do you?' There was no mockery in her voice, only astonishment. 'You actually don't know what this consignment is, do you?'

'I'm afraid I don't,' Muller said.

She turned to one of her sidekicks and had him walk back to one of the pick-ups and return with two dark shapes hanging from his hands. Muller saw what they were as he came closer, into the pool of light around the road train. He was carrying jerry-cans.

The woman took one of the cans for herself, then passed the other to Muller. 'I'll show you, if you like. But you won't like it, I think.'

He hefted the jerry-can.

'What's this for?'

'You'll see.'

■ ■ ■

The one remaining option, Leitner said, disturbed some people. But look on the bright side. It was cheap. And that meant the only large expense in the whole process was wiring her neural patterns back into the clone's brain.

'Now, obviously,' Leitner said. 'Someone has to pay for it. And the logical someone is the person who's going to benefit from it in the first place.'

Sapphire thought she was catching on fast now; getting the hang of the future. 'Let me guess. You bring me back to life and then it's like, my ass is yours, until I pay back the costs?'

'Well,' Leitner said. 'You've got the gist of it right. Just not the timing.'

And then he told her what they called people like her—people who existed only as neural recordings running on some computer somewhere; people who weren't, by any legal definition, actually people at all, although they had the potential to become so at some point in the future, if they wished. How they were called transients, and how, around the world, at any one time, thousands of transients were actually working, doing the jobs considered too messy for cheap software and too shitty for the living; slowly accruing the credits they needed to pay off their future return to humanity...

■ ■ ■

Perhaps it was the stench of diesel that did it, or the red stain on his fingers from the dyed liquid, which managed to look exactly like blood, or the smell he hoped the stench of diesel would mask, but which still lingered in the air. Perhaps it was all of these things, or perhaps it was the look he had seen on Blaine Dubois's face; the look of a man whose soul had been slowly eviscerated.

Or perhaps it was what he had seen in the dirt, at the rear of the road-train, where the last trailer had broken open.

The black woman had never introduced herself as they walked along the length of the train, but she had gone some

way toward preparing him for what they were about to see. It was, she said, the real reason why they had stopped this train. Not because of the land rights—that was a lost cause now, and in any case it wasn't *her* fight. No; what they had stopped the train for was the cattle. Because of what the cattle were carrying.

'Rawlinson said they were pregnant,' Muller said. 'He said that was why the train was carrying them to Adelaide. But I didn't understand the significance.'

'Cloning,' the woman said. 'That's Cadman's part in the big operation. Growing the bodies that the transients need to return to, when they've paid their dues.'

And then she showed him what she meant, and Muller finally placed the squealing noise he had heard. The noise that was so much like human crying. So much so, in fact, there was very little else it could be.

The cows had been ready to calf, Rawlinson had said. But not quite. And those that had died had ruptured; splitting open to reveal burdens they had never been meant to carry. Burdens which shifted and squirmed, until the closest one, the one that was squealing the loudest, turned its not-quite formed adult face toward Muller and opened its pale eyes in a scream of apprehension.

The woman shot them with a tiny pistol Muller had not noticed her carrying, and when the squealing was over they unscrewed the jerry-cans and emptied them.

■ ■ ■

The deal was simple.

The Singaporean company that owned the biotechnical patents which would restore Sapphire to life had many subsidiaries. One of these was a firm called Cadman who used transients to drive their road-trains. In some way which Leitner didn't go into, this operation was integral to the whole process of bringing the transients back to life—but that wasn't important; she could just as easily have ended up operating a sewer-inspection drone or one of the

machines which scraped barnacles off the bottom of oil-tankers. To pay off her costs, Sapphire would have to drive one of Cadman's trains for a year. She'd spend 20 hours a day doing this—transients didn't need sleep—but for the remaining time she would have access to all the world's data nets; all the simulated experiences she could desire.

There, now, it didn't seem so bad, did it?

Finally, when the terms of the deal had been made absolutely clear to her, Sapphire agreed to it. And there followed a strange period of limbo, in which she was disconnected from all input and her rate of computation slowed to a crawl.

And then she woke up in the desert somewhere, at night. Except she wasn't really there; just observing, and this guy who looked and sounded South American was politely running over things again; telling her how she was taking over this particular consignment because the last transient had flipped, or something. And she'd laughed at that, because while a year was a long time to do something, it wasn't so long, was it?

While behind this guy, she saw lots of dark, faceless people milling around, carrying what looked like guns and talking in an edgy melange of different languages, none of which she could begin to place. And in the foreground, the weirdest kangaroos she had ever seen.

Welcome to the future, Sapphire thought.

Fresco

On the day that the blue ones stopped transmitting, the caretaker was doing its rounds of the Eye, humming and pottering among the other, duller maintenance robots.

Then, when the news came in, it stopped humming.

Near the heart of the Eye—the vast radio telescope floating beyond the orbit of Jupiter—was a gigantic spherical tank which had once been used to store the water the humans had needed during the construction. They had lived in it, too—dwelling in pressurised cabins surrounded by water, shielded from radiation.

Now they were gone—long gone—but the midnight blue tank remained.

Like, the caretaker had thought one day, a huge blank canvas.

■ ■ ■

Until the coming of the Eye, no radio telescope had been sensitive enough to pick out signals of intelligent origin from the mush of cosmic background noise. But then the feast had begun: a tsunami of knowledge almost beyond human comprehension. Yet the messages showed that humanity was still fundamentally alone. All the signals had originated in other galaxies, often at distances that bordered on the cosmological. They had been sent hundreds of millions of years ago, when the dinosaurs were still evolution's cool new idea.

But there was a more disturbing thing even than the loneliness.

At any one time the Eye was picking up the messages from about a hundred civilisations, but each only stayed active for a few centuries before falling silent. The net number stayed roughly constant because new species were always popping up and discovering radio astronomy, but they too would be doomed to spend only a relatively short amount of time among the hundred. For a few glorious centuries they would broadcast their cultural legacy into the sky; enriching the knowledge of the other listening cultures.

But then—it was often around the time they started discovering some of the more interesting things that could be done with subatomic particles—they would stop sending.

Usually without much warning.

■ ■ ■

It shouldn't have bothered the caretaker.

But in tending the Eye it found that it became quite attached to some of those transmitting cultures. It became absorbed in their histories; fascinated by their biologies and outlooks.

It hummed their music and pondered their art.

And waited with deep, mounting sadness for the day it always knew would come; the sudden, roaring silence from that part of the sky.

■ ■ ■

It moved to the part of the Fresco which recorded the senders in a distant galaxy in the constellation Sculptor.

The caretaker had marked the tank with faint lines of celestial latitude and longitude. At the precise co-ordinates of the transmitting civilisation, it had painted a spiral galaxy much like our own; an impressionistic swirl of white and ochre. It was one of the first galaxies that the caretaker had painted, and while it had gained proficiency since—there were better ones dotted all around the Fresco—there was a certain charm to this effort which appealed to it.

Two thirds out from the core, the caretaker had marked the location of the transmitting culture's solar system.

It thought of them: blue, tentacled aquatic beings with a reproductive system so intricate it had taken the caretaker decades to work out how many sexes they had. Their music had been even trickier; sounding at first pass like synchronised drowning. But the caretaker had persisted, and after a while it had even caught itself humming some of the more accessible bits.

But they were gone now.

Silent.

* * *

Nothing for it, then.

With sadness in its heart—but at the same time emboldened by the execution of a solemn task it knew must be done—the caretaker prepared the precise shade of midnight blue it needed. When it was ready, it carefully stippled the galaxy into oblivion, like a master picture restorer removing a blemish. The caretaker was very good at its work, and when it was done there was no sign that the galaxy had ever existed.

The Fresco was up-to-date, but it would not be long before it had to be changed again.

Art is long, it thought. And life short.

Viper

The man from the National Institute of Corrections reached the Bureau of Prisons checkpoint at sunset. His government-issue three-wheeler had been assembled from modular components that morning in Merced, for one journey only, plus the trip back to the disassembly center. Flashing his badge at the gate, Stockard mused that the car still smelled as if it had carried a thousand occupants—all with questionable hygiene.

Barrier up, he drove manually into the compound, parking next to a pair of railroad lines. Glancing into the mirror, he straightened his tie and tried to ignore the tide of perspiration licking around his collar.

He remembered the colonel.

He took the slip of paper from his pocket, glanced at the phone number one last time before chewing it to a pulp.

Then got out of the car.

'This way, sir,' said a white-helmeted security guard, toting a machine-gun molded in lurid green polymer. 'Prison's due in about five minutes, so we'd better hurry.'

Near the horizon, a white line rippled in the haze.

'I knew I was late, but it looks miles away.'

'Be here sooner than you think.'

A single spotlessly white locomotive throbbed at a standstill, coupled to a passenger car. Both items of stock were armored and emblazoned with eagle-and-shield seals, their windows fenced by grills. Stockard was helped aboard, the armored door closing immediately. Through one of the grilled windows, he saw the landscape start moving.

'First time out here, Mr Stockard?' Another correctional officer; buzz-cut hair the colour of ash. 'If so, there's a few things you need to know.'

'A prison's a prison,' Stockard said. The National Institute of Corrections was a smaller branch of government than the Bureau of Prisons, and Stockard was accustomed to condescension from the larger organisation, to which the NIC provided advisory and technical support. 'How different can it be?'

'One-hundred-and-thirty-miles-an-hour different.' The guard frisked him while he talked. Another went through Stockard's suit jacket and briefcase, handling the viper equipment with due caution, aware of the value it represented, if not its function. 'About twice as fast as we're moving now.'

'I wasn't planning on jumping.'

'Good thing, too. Wouldn't leave enough of you to top a pizza!'

Sparse prairie vegetation whisked past the tinted windows.

'Anyone try it?'

'Occasionally. If they can get to the outside of the train, which isn't easy. Then, of course, they're tempted—freedom's only a hop away.'

'So's Pizza Hut.'

'You got it!'

They handed him his briefcase, the viper equipment still inside.

'Move forward into the next compartment, please,' said the guard. 'The MIF'll be drawing alongside shortly, and we don't have much of a window to get you across.'

He was led through into a white-walled room. A guard watched a screen, fingers poised above a set of controls, day-glo rifle slung across his back. The screen showed the train Stockard had seen in the distance, slowly pulling alongside. Three snorting locomotives hitched together at the front, armored like rhinoceros, hauling a string of wide, double-deck cars.

The room slid to one side; a mild bump signaling the meeting of the two trains. The armored door opened to reveal white bars, two interior train guards standing behind them.

'Welcome to MIF-17, Mr Stockard. I'm Warden Paula Wills.' He was being addressed by a small, olive-skinned woman in a burgundy suit. 'I don't often get to say this—at least not with any sincerity—but I hope your stay inside our facility is a pleasant one.'

Stockard struggled for a riposte as he stepped aboard.

'Certainly impressed by what I've seen so far.'

Warden Wills smiled. 'Consider how it looks from an inmate's point of view.'

'Pretty scary, I imagine. I'd still rather psychos like Culhane were kept behind a few meters of concrete.'

'I don't much blame you, after what happened with Grodin.' Wills indicated that they should move down a narrow windowless corridor. 'If it's any consolation, I'd have made the same judgments had I sat on that board.'

'It isn't, but thanks for the sentiment.'

'Nonetheless, it doesn't alter the facts here. Avery Culhane's served his sentence. A dozen internal psychiatric evaluations say he poses no threat to society.'

They paused to collect coffee.

'Pretty much what we thought about Grodin back in '27.'

'The psychiatric models are better now. If Grodin underwent the same evaluation we've given Culhane, no way he'd get out.'

'Too late for Grodin's victims, though.'

There was a moment's hesitation before she answered, and Stockard knew why. What had happened to his wife was not a secret well-kept within the service.

'You know I can't keep Culhane incarcerated to atone for prior errors. Start doing that, we're as bad as the monsters we lock up.'

'Can't you find some reason to hold him?'

'Sorry, but being a creepy sonofabitch isn't currently a federal offense.'

'Shame.'

Wills nodded wearily. 'I agree, actually—but unless you can come up with something, Culhane walks.' She glanced uneasily at the briefcase, as if it contained a literal viper. 'When will it—um—begin?'

'As soon as he's asleep. We'll need a dedicated room, of course. The whole procedure could last several days.'

'I thought it would take longer.'

'Sometimes it does.' Stockard thought about the sixty-seven previous inmates he'd put through the machine. 'But three days should be plenty long enough for Culhane, trust me. It'll seem like a hell of a lot more to him.'

'I don't understand.'

Stockard lowered his voice. 'Once he's in viper, the machine will intervene in the normal functioning of his internal clock, a neural structure called the frontal-striatal loop. They mapped it in rats, originally.'

'That's legal?'

Stockard shrugged. 'It's a pilot project. It can stand a few gray areas.'

■ ■ ■

They walked deeper into the train.

When the correctional system finally choked, and when pressure groups decreed that every potential new prison was a blight in someone's backyard, the only logical option had been to build prisons that did not occupy fixed locations.

They called them Mobile Incarceration Facilities.

Each mile-long MIF consisted of one hundred cars; each double-deck vehicle housing twenty single-occupant cells in

rows of ten each, facing gangways painted white and reeking of Clorox. Periodically, cars were opened out for canteens or recreation. There were workzones under the auspices of Federal Prison Industries, where inmates earned a small wage. There were infirmaries, six classrooms, plus a dozen cars set aside for prison administration and accommodation. Even a helipad on the roof. Glue-gun and taser turrets ran along ceiling rails. Stockard didn't see many guards, and most of the inmates looked subdued.

'What about the secrecy angle?' Wills said. 'Why did I have to sign so much damned paperwork?'

'Viper only functions if people don't believe it exists.'

'Like the Easter Bunny in reverse?'

'Except this bunny's matte-black and fits in a briefcase.' Stockard smiled. 'Leaks are unavoidable. But as long as they stay at the conspiracy-nut level, we're safe.'

'What about the inmates who go through the system? Aren't they a risk afterward?'

'Not at all. Most of them can't integrate the experience afterward—they assume they dreamt it.'

'Next of kin, then? If an inmate fails, doesn't the family want to know why?'

'And we tell them. Behavioral tests indicated lingering sociopathic tendencies. Nothing more needs to be said. Anyhow, if viper reveals pathology, chances are it'll have shown up elsewhere.'

Wills halted, next to a guarded door.

'Culhane might be the exception that proves the rule.'

* * *

The door admitted them to an interview room, spartanly furnished. Avery Culhane was the sole occupant.

'I told you,' the inmate said. 'You won't find anything in my cell—no matter what you're looking for.'

'Shut up, shit-stripe,' Wills said. 'I don't recall giving you permission to express yourself.'

'I need permission now?'

Culhane was sitting in a bolted-down seat with his arms above his lap, clothed in jailhouse denim. Stockard placed his briefcase between his knees as he lowered himself into one of the vacant chairs.

'I'm a criminal psychiatrist with the National Institute of Corrections. They've sent me to offer my expert opinion to the parole board.'

Behind, the cell door closed, leaving them alone with Culhane. Scenery streaked past outside like a faded film.

'Been a good boy, haven't I?'

Apart from a fastidious mustache and beard, and oiled black hair raked from his forehead, Culhane didn't look old enough to have served a term of nearly ten years. But Culhane had been a precocious offender, and there were few landmarks of sociopathology that he had not visited, including the standard dysfunctional childhood and early experiments in the giving of hurt.

'No, Avery,' Stockard said quietly. 'The one thing you most certainly haven't been is a good boy. That's why you're on the train to Fuck-Up Central.'

Six separate families, butchered in their homes over a period of four years. The details were horrific; exercises in carnage which one journalist had described as the formalised sculpture of living meat.

'I did terrible things, I admit that.'

'Question is, do I believe you when you say that?'

'You could ask that question of any inmate in any institution in the country, and the answer wouldn't mean shit.'

Stockard nodded. To which, he thought, it was but a short jump to the ultimate solipsism: that the universe was populated by nothing except living meat, awaiting sculpture.

'Do you know what will happen to you if you're released?'

'Transfer to a half-way house; low-security institution with real cutlery and some scenery that doesn't move the fuck past the window.'

'What if you feel like slicing someone?'

'I could ask you the same question,' Culhane said. 'You've seen the clinical tests. Start doubting those and you're on a very slippery slope. Some real snakes in that ethical grass.'

Stockard leaned forward until he could smell Culhane.

'What did you say?'

'I said, some real snakes in that ethical grass.' Culhane frowned. 'Just a turn of phrase.'

A beeper went off. Warden Wills unclipped it from her belt and read the message.

'Sorry,' she said. 'But this little chat will have to be curtailed.'

■ ■ ■

'What is it?' Stockard asked, when they had left the room.

'Oh, the usual armed prisoner with a hostage deal; nothing we can't handle.'

She sounded like she meant it.

They passed along more cell cars, then through one of the workzones, where Stockard saw prisoners englobed in white virtual-reality rigs. Most of the contracts FPI serviced would be in data-flow management; glorified plumbing where workers helped ease the fluid movement of information around the global networks.

The incident was near one of the FPI cars.

A cordon of guards blocked their way, but they pushed through to the front. At the far end of the aisle, an inmate was holding a pink gun against the neck of a young officer, pinned in an armlock by the muscular prisoner. One of Wills's adjutants was negotiating with the inmate. From what Stockard could gather, the man was being asked to put down the pink gun voluntarily, in preference to being forcibly disarmed.

Wills whispered: 'Stupid damned fool. It must never have entered his mind that none of the other inmates made an attempt to grab the gun.'

'What happened?'

'The guard was escorting three prisoners back from the work-zone when he noticed an obstruction in the ceiling track. He was trying to free it—contra regs, of course—when he lost his footing and dropped the gun. He'll be on suspension, now—and serves him right.'

'Aren't you more worried about him getting his head blown off?'

'Not really. There's a safety chip in the gun, for a start. But the inmate doesn't know that, and I'd rather he surrendered the weapon thinking it was still useful.'

'Aren't you going to intervene?'

'Not unless my team can't handle it.' She sounded almost disengaged from what was transpiring. 'Is something the matter, incidentally?'

'Maybe,' Stockard said. 'Anything strike you about the little conversation we had back there?'

'Not really—if Culhane threatened you, I missed it.'

'It wasn't exactly a threat. More a hint that he knew about the program.'

Now he had her interest.

'That isn't possible. Is it?'

'Maybe we should have chosen a different acronym. But if Culhane does know, it changes everything.'

Suddenly, a voice was loud. It was less a shout than a heightened conversational voice.

'For the last time, surrender the weapon. You will not be warned again.' There was a pause of five seconds before the man spoke again, now so quietly that Stockard barely caught it. 'All right. Liquify the fucker.'

Someone did something.

The gun lost its solidity, splashing to the floor in a torrent of lurid pink. Bullets rained down with it, chiming as they landed, rolling harmlessly away from the inmate. The man looked down in dumb incomprehension at his fist, still shaped around a grip that had just ceased to exist.

He was standing in a luminous pink puddle.

'Smart polymer,' Wills said, sighing. 'Gets 'em every time.'

■ ■ ■

Stockard phoned his wife from the prison and told her about Culhane.

'When I looked into his eyes, it was like flashing back to Grodin. I'm scared, Catherine. Scared that it's happening again, only this time I know it, and there's still nothing we're going to be able to do.'

He blew a kiss down the phone and hung up.

Two hours after lights out, Stockard and Warden Wills visited Culhane, along with a young intern and two orderlies, all of whom had signed the relevant paperwork. Culhane had been moved to a new cell in a different part of the train. The door was opened without disturbing him and the doctor, moving silently as a ghost, administered something that would keep Culhane sleeping. The orderlies took Culhane's body and carried him from the cell, passing along red-lit corridors until they reached the room that had been assigned for the viper procedure. The room housed an examination couch, surfaced with a sterile mattress.

'Put him on it,' Stockard said, placing his briefcase down on a cabinet. 'Face up will do.'

After the orderlies had left, he flicked open the case and removed the components, arranging them methodically. Status LED's pulsed to signify the health of each part as Stockard reassembled the equipment.

'Quite something,' Wills said.

'I was the kid who always wanted a Junior Spy kit,' Stockard said.

The main part of the viper apparatus was a skeletal black helmet, formed from interlocking rings and arcs. The inner surface was nubbed with a matrix of delicate superconducting magnetic field generators. When the crown was fitted over Culhane's head, the field generators aligned themselves with areas of neural function and commenced generating test fields. Ghostlier fields generated by the electrical activity in Culhane's brain were already being measured by the device and compared against its vast neurological library.

'All right,' the intern said, slipping an IV into Culhane's forearm. 'Much as it pains me to admit it, I don't have the faintest idea what this is about, other than I'm supposed to keep this turkey sedated for as long as it takes. Would you care to explain?'

'Viper,' Stockard said. 'Virtual interactive parole evaluation resource. Imported Indian airforce VR technology.'

'I'd heard the Indians were ahead of us in certain fields, but...'

'Not so much ahead of us, as pissing on us from a great height.' Stockard tapped the ultraslim control console that rested on an adjacent table, connected to the helmet by a tangle of optical ganglia. The console had a small keypad and a slot holding a diskette. 'Viper's adapted from training equipment. They wanted to use VR to assess the psychological fitness of their pilots. Trouble was, in order to get a realistic response, they had to make it seem so real it couldn't be distinguished from reality.'

'You'd still know it's fake.'

'Not if you're put into it while you're asleep. That was how they tested their pilots. One day they'd wake up in the middle of the next world war. They didn't have time to shit their pants, let alone ask themselves if they were inside a simulation.'

'And if they had asked?'

'They wouldn't have been able to tell, anyway. Viper blocks any sensory information not consistent with the scenario.' Again he touched the console. 'There's a whole world being run in there—from the inside of Culhane's cell outward.'

'How far does it reach?'

'As far as it needs. It invents itself on the fly—generating environments on demand, depending on Culhane's actions. Some of the locales, like the prison, are precise mappings from the real world. Mostly, it's fictitious, although everything Culhane will encounter will seem plausible.'

'What if Culhane tries to go someplace it can't simulate—some place he knows, but it doesn't?'

'He'll find it very difficult to get there. It's the same with people. He won't be allowed to interact with anyone the system can't fake.'

Stockard threw the others each a pair of flimsy goggles, like the kind that came in cheap VR games.

'That's the technical side. The political side is that Delhi licensed the basic technology to our airforce, and the flyboys slipped it to the NIC. You can see the attraction.'

They snapped on the goggles, which had retractable, earplugs in the arms.

'Not really,' the intern said. 'But go on.'

'Think about it. The service is choking with inmates who could be released, if only we knew they weren't going to screw up again. But no clinical tests could ever filter the real monsters; the ones who've read more pysch literature than the shrinks.'

'Like Grodin,' Wills said.

'Except we didn't have viper back then,' Stockard said. 'But with it … we could have put Grodin to the test. We could have made him think he was already free. He'd have tried to kill again—but this time it wouldn't have been for real.'

Smart polymer morphed around their eyesockets, blocking the room. The NIC seal appeared, followed by a bewildering geometric test pattern, then the interior of Culhane's cell.

Culhane was sleeping on his bunk.

'So let me get this right,' the intern said. 'That's what he thinks is happening to him right now? That he's still safe and warm back in his cell? This is too weird.'

'It's about to get weirder,' Stockard whispered, touch-typing a sequence of commands into the viper. 'I'm waking him up. Of course, the machine'll be hijacking all voluntary motor control—but it'll be evoking fake proprioceptive and tactile stimuli in accordance with any movements Culhane thinks he's making.'

Culhane woke and climbed out of his bunk, with the rapid motion of an actor in a silent movie.

'What's with the Keystone Kops shit?'

'Deep down in the basal ganglia,' Stockard said, 'is something called the substantia nigra. Usually damaged in patients with Parkinson's disease. It feeds a stream of electrical pulses to the striatum, part of the motor control center. Turn off those pulses, and the frontal lobe doesn't get any information about elapsed time. Viper simply stimulates the striatum more rapidly than normal, and suppresses the usual signals from the basal ganglia.'

'How much faster?'

'Factors of ten to fifteen aren't unusual when there's little motor or linguistic activity.'

Culhane was flashing around his cell, running through the routine motor activities of dressing and shaving. Stockard slipped off the goggles and looked at the inmate's recumbent form. Although the paralysis was holding well, minute rapid twitches afflicted his extremities.

Stockard put back the goggles.

Cuihane's flickering motions slowed as someone came to the door and spoke to him. The comprehension and generation of speech tied up large tracts of the Broca and Wernicke linguistic centers, necessitating slower stimulus of the frontal-striatal loop.

A correctional officer entered the cell, followed by Warden Wills.

'Good news, Culhane,' she said, like a tape being played too fast. 'Parole hearing's been pushed forward.'

Culhane placed his safety razor down on the basin, foam still lathering his chin. 'To when?'

'One hour from now. Try not to screw it up, will you?'

The real Wills said: 'That's exactly what I would have said, more or less. How'd you manage that?'

'The viper assimilated hundreds of hours of routine prison security system recordings,' Stockard said. 'It assembled predictive models for all the major players, using hacked synthespian routines.'

They watched the parole hearing, knowing that the outcome had never really been in doubt. Based on the evidence at hand,

the committee had no option but to allow Culhane to leave the prison. Of course, things might be different in the real hearing—Culhane's actions in the viper would decide that.

But so far, he hadn't done anything to harm his chances of release.

* * *

'I'm worried he knows,' Stockard said to Wills, much later.

'Just because he hasn't made a mistake yet? Doesn't that kind of suspicion invalidate the whole point of this exercise?'

Stockard didn't answer. It wasn't a question he particularly wanted to think about. She was right, of course: he was treating Culhane as if the inmate was another Grodin, simply because he didn't like the man and because Culhane had made an offhand remark that might have been completely innocent.

If he called the colonel...

No; he crushed the thought, even as the colonel's number wavered in his mind's eye. He had to cling to the hope that Culhane would implicate himself, without Stockard's help.

In the simulation, following his successful passage through the parole board, Culhane had been moved from the MIF to a half-way house. The house was simulated with the same precision as the prison, populated with a cast of characters run by Turing routines, compiled from years of study of real individuals in the correctional system, both inmate and servant. Culhane slipped into this new transitory life with ease. As days of accelerated time passed, he did not put a foot wrong, giving every impression that he was fit to return to normal life, even if he would never be anyone's choice for citizen of the week. Gradually, when days had passed in the MIF, weeks of viper time, Stockard elected to lay a trap.

Stockard did not tell Wills or any of the other officers what was about to happen —it was not required of him to do so, since Culhane's actions were in any case being captured for posterity on the diskette. Instead, he tapped another sequence of commands into the console and waited for the simulation to accommodate

his wishes. There was a lapse in security at the half-way house—a plausible sequence of human errors that culminated in Culhane having a perfect opportunity to slip out of the establishment, into the dusk. From there, viper would arrange things so that Culhane would come across a lonely, unguarded house where his past crimes could be repeated anew.

Culhane noticed the lapse, as intended.

Stockard watched, heart thundering. One transgression would be all that it required to ensure Culhane never left the prison.

Instead—after a few minutes of hesitation—Culhane reported the lapse to a correctional officer, and then turned away from the man with a smile ghosting his features.

■ ■ ■

The colonel wore a T-shirt with a holographic sphinx, wrap-around shades keyed into the atrium's infotainment channel. Lounging on a chair next to a fountain, he was chortling at cartoons when Stockard dropped the diskette in his lap.

They had agreed to meet in a fifty-year-old pyramidal hotel in Vegas, still proudly displaying the faded decor of the casino era. There were still enclaves where tourists could gamble, but the stakes were never high enough to attract the old-time high rollers, now that computers could be implanted invisibly in an eyeball.

The colonel examined the diskette dubiously.

'Doesn't look like much, does it. Not much on which to hang a man's entire destiny.'

'Save the poetics for when you've done the edit.'

'You don't really like me, do you, Mr Stockard? And yet you admit I have my uses.

'So does shit paper, but it's not on my Christmas list.'

'I shall ascribe your bad manners to your evident ill-health, Mr Stockard. You look quite poorly.'

'I had to induce food poisoning to justify leaving the train in the middle of a viper run. I'm booked into a clinic later today. You'd better have the diskette ready.'

'Quality work cannot be rushed,' the colonel said, as maddeningly calm as ever. Nothing about the man had changed since the day, years earlier, when he first contacted Stockard, with some interesting information relating to the technology that his own government had recently licensed. It turned out, for instance, that there existed a number of deliberate flaws in the hardware. The diskettes, supposedly protected by impervious encryption algorithms, could in fact be edited by those in the know.

Over the years, Stockard had quietly skimmed his own savings into an emergency fund to cover just such an eventuality: thirty thousand NACU in untraceable notes. It seemed a small price to pay, if it meant never repeating the mistake of Grodin.

The colonel turned the diskette this way and that, as if hoping to divine the answer in the shifting patterns of reflected light playing across its surface. An identical but blank diskette now resided in the viper console. Stockard would swap them again when this copy was edited.

'I will have to network it to my associates. They are fast, but they will need documentation, so that the crime is consistent with what has happened before.'

Stockard passed the colonel an envelope thick with forensic evidence culled from Culhane's previous murders. The murder that would be faked in simulation had to incorporate enough points of similarity to seem part of a modus operandi, yet not be a slavish copy.

'How shall we integrate the crime?'

'Shortly after Culhane was transferred to the half-way house,' Stockard said, 'the simulation gave him a chance to escape. Of course, he didn't take it, because he knew he was being watched. Now, though...'

'History, or rather the disk, will be rewritten; the temptation will arise again, and this time he will escape.' Stockard imagined the colonel mentally assaying these points of importance. 'And then, presumably, he will be confronted with the opportunity to murder.'

'Not far from the safe-house,' Stockard said. 'No matter which direction Culhane would have chosen, he was guaranteed to stumble on it. An isolated family house, good white-bread folks, poorly defended, easily infiltrated.'

'Culhane enters the house?'

'He'd do it by moonlight. Then kill the family inside. Not just kill.' Stockard felt himself shivering, a response that had nothing to do with the air-conditioned atrium. 'It has to be sculptural.'

'How utterly distasteful.' The colonel leaned back in his seat, upraised shades reflecting the light-studded form of an atrium elevator ascending toward infinity. 'Good job you're paying me for my services.'

He smiled, returning to his cartoons.

■ ■ ■

The clinic in Vegas ran rapid transfusions and didn't ask too many questions. By the time they were done with Stockard—purging his credit as thoroughly as they purged his intestinal tract—it was time to retrieve the diskette from the colonel.

'It's good to have you back among us,' Wills said, when he'd returned to the MIF near Modena. 'I was worried about you back there.'

'Just one of those anaphylactic shock things.'

'Good. I just hope we get results on Culhane soon. Don't know how much longer we can keep him under before questions get asked.'

'Hopefully not more than a few hours.' Stockard took his briefcase from the correctional officer who had just examined it. It was almost empty now; the solitary diskette resting inside arousing no suspicions. 'I'll need some time with him alone, though.'

One of her team escorted him to the viper room, opened the door, and let him inside.

No visible change had affected Culhane. The IV drip had supplied his nutritional needs and the orderlies had moved

him periodically to avoid pressure sores. The headset was still clamped around his skull.

'Sleeping beauty,' Stockard whispered.

Satisfied that the door was shut behind him, he ejected the diskette currently in the console and replaced it with the edited copy the colonel had supplied him.

'Now let's see what crimes you couldn't resist.'

According to the documentation that had accompanied the viper, swapping a diskette in mid-simulation was as impossible as editing a diskette. But the possibility of committing both acts had been engineered into the system from the outset. The designers had recognised that a system not amenable to corruption was of no use to anyone.

Stockard slipped on a pair of goggles and fell into Culhane's world, accessing the recording of Culhane's actions stored on the diskette. Like someone rewinding a film, he jumped back to the time when Culhane had the chance to slip out of the half-way house.

This time, he took the bait.

Stockard fast-forwarded a few hours, then watched, from a bodiless point of view, as Culhane scoped a lonely colonial farmhouse on the edge of a marsh. Dusk was falling, frogs calling across the still, moonlit waters. A few lights burned in the house; a family at home. In an unlocked boathouse, a knife presented itself to Culhane. He hefted it, dancing at shadows, then turned toward the house. The porch door creaked ajar.

It was a perfect night for sculpture.

* * *

Sweating, Stockard replaced the dummy diskette in his briefcase and turned to leave the room.

The pattern of events on the edited diskette—the escape from the half-way house, and the subsequent multiple-killing—were sufficient to ensure the inmate never left captivity again. All that remained was to present the evidence to the parole board and let it make up its own mind as to Culhane's sanity. In a few

hours, Stockard would know if his own small sins had been justified.

He reached the door and was ready to open it.

The door faded away. His hand passed through its insubstantiality—and then his hand faded away with the door, along with the rest of the room and the sensation of standing up.

Instead, he was on his back, something clamped painfully around his skull.

The only thing that hadn't changed was the constant subliminal roar of the train.

'Tampering with Federal evidence,' someone whispered; one of several dark figures clustered around him. 'A very serious matter. But we never thought you'd really do it, Stockard. Even after what that piece of shit did to your wife.'

Another voice: 'Which is why we had to be sure.'

'Any idea how long you've been in that thing?'

Stockard screamed. He reached up and pulled at the vicelike mass of metal crushing his head, knowing exactly where he was. But his hands did not close around the hard frame of the headset. Instead, they pummeled something soft, yielding.

And then he woke.

He'd fallen asleep next to Catherine, his head embedded in the sweat-sodden cleft of a pillow. Sitting in the armchair by her bedside where he'd fallen asleep the night before, Stockard reached out and took Catherine's bird-thin wrist in his hand.

He'd just had the nightmare again—as, unpredictably, he'd had it every few weeks in the months since the incident with Culhane. Although the details varied, the dream always began with them discovering that he had tampered with the evidence and it always ended with his disgrace.

It hadn't happened like that.

No one had ever suspected that the faked diskette was anything other than the genuine article; most certainly not the parole board, which had voted unanimously to keep Culhane locked away for the rest of his natural life. Which, as it happened, had been little more than four months; before someone performed a little sculpture on the artist himself. Stockard's

evidence had been praised as a significant contributory factor in the eventual decision not to release Culhane, and the viper project had been greenlighted for scale-up. Stockard had been forced to decline a promotion to a coveted NIC desk-job.

'I thought the dreams would stop when I kept Culhane inside,' Stockard whispered, stroking her wrist, watching Catherine's slow, measured exhalations, mediated by the tiny life-support device implanted in the base of her skull. 'I thought that if I kept one monster from getting loose, that would atone for the one that beat me. But you'd have known better, wouldn't you? You'd have known that it never works like that.'

Stockard gently brushed Catherine's hair from her eyes, then stood. He looked at the old clock, hanging against faded floral wallpaper still speckled with the tiniest drops of her blood, if one knew where to look. Soon it would be time to leave. He would walk downstairs, fix coffee and then wait for a government-issue car to roll up outside. Then, briefcase in hand, he would stroll out to meet the car and let it take him wherever his special services were required.

Catherine stirred. The specialists said it was nothing one could be hopeful about; not given the harm Grodin had inflicted. But Stockard had never allowed himself to lose all hope.

The telephone by her bedside was set to loudspeaker.

'I'll call you later,' he said.

Then he kissed Catherine and went to judge whatever monsters the day had provided.

Soirée

My hands were sweaty, and that wouldn't do. I brushed them against the back of my skirt, hoping that no one would notice me doing it and that the dampness wouldn't show against the dark fabric. The black shoes were hurting my feet and the black stockings felt as if they were cutting off the circulation in my legs. Looking around at the other members of the reception party, none of us looked comfortable in the outdated, puritanical-looking costumes. The idea was that the clothes—derived from records dating from the time of *Starcrosser's* departure—would strike the right balance between civic authority and reassuring familiarity, but we could only guess what the passengers would make of our outfits, as well as our choice of makeup and hairstyles.

Never mind. It was much too late for second thoughts now.

I glanced back at Gil Peterson, who was listening in via an earpiece to the technicans monitoring the capsule.

'Are we good to go, Gil?'

He touched a finger to his ear then nodded. 'They're moving around inside. I think we should go in immediately, before they start getting concerned.'

I glanced at the other members of the party, gettings nods of assent. They all looked nervous, but this was what we had been training for and all of us were absolutely prepared.

'All right,' I said. 'Let's do this. Happy faces, everyone. We want them to know they're among friends.'

I began to walk along the connecting ramp, shadowed by technicians and a swarm of floating cameras. At the end of the ramp, resting on a bright yellow cradle, was the craft that contained the sixty passengers. The main part of *Starcrosser* was still in orbit; this was just the life-support and re-entry capsule; the pimple on the end of the nose. It was a blunt arrowhead, stubby-winged, white with black markings, ticking and creaking as it adjusted to the pull of gravity and the crush of a planetary atmosphere. It had been brought down from space in a tractor field, and then subjected to aggressive quarantine measures. Only when those measures were coming to an end had we sent an electronic signal into the capsule, instructing it to bring the passengers out of suspended animation.

As Gil had told me, those people were now warm and mobile. It was time to say hello.

I knocked bare knuckles on the outer door, then stepped back and clasped my hands behind my back. Several seconds later there was an eruption of vapour from slats next to the door and the door began to hinge open, the movement accompanied by the flashing of orange lights and a squawking tone. My heart was racing as the vapour dispersed. The cameras and technicans jockeyed around me for the best angle.

Someone loomed in the door. I fought the urge to take a step back, holding my ground. The figure was a man, wearing a silvery garment studded with medical tabs, life-support cables hanging limply where they had been disconnected from the capsule's equipment. He was middle aged, bearded, patrician-looking, his expression serious and guarded but not fearful.

I recognised him instantly.

'Do you understand me?' he asked.

'Perfectly, Captain Fisher.' I walked closer to the door and extended a hand. 'I'm Alice Hodgkin. On behalf of the Planetary Coordinating Committee, welcome to Benevolence. We're very glad that you made it.'

'You know my name.'

'And a lot more than that. We know the names and biographies of all sixty people who left Earth in the *Starcrosser*.'

'Did we make it?'

'Yes,' I said. 'Absolutely.'

Behind Prescott Fisher, peering through the doorway, were other silver-clad passengers, of various ages and sexes. They had the stunned look of small animals exposed to sudden light, as if the capsule was a den which had just been uncovered.

'Then where are we?'

'The place you expected to be. It's just that we got here ahead of you.'

'We were the only ship that got out.'

'No, just the first.' The words I had rehearsed so often poured out of me. 'While *Starcrosser* was *en route*, technology raced ahead. We made better drives, faster ships. Colonists reached Benevolence fifty years ago. I was born on this planet, and my parents only have very faint memories of Earth. Don't worry, though. We came in small numbers—our ships brought many other systems within reach—and most of the planet is still relatively unexploited. There's more than enough room for sixty newcomers.'

Fisher was unsteady in gravity, taking faltering steps. Gowned technicans raced to support him before he stumbled. He looked back at the other passengers, some of whom were beginning to emerge from the capsule.

'What happened back home? When did the Singularity hit?'

I smiled, trying to put myself into his mindset. History recorded that the passengers of the *Starcrosser* had considered themselves refugees escaping a coming catastrophe they deemed a stone-cold certainty. 'It never did, Captain Fisher. You were right to be concerned, but the scenario you feared never came

to pass. Machines got cleverer, it's true. But there turned out to be hard limits to robot intelligence. Beyond a certain point, they got faster but not smarter. Those machines gave us the new drives, the new physics that underpinned everything. But they never posed a serious threat to human hegemony. Earth's changed—you'd probably find it quite disorientating by now—but there are still people there, still in charge.'

Suspicion lingered in his expression. 'If you overtook us, why did you wait until now before bringing us out of suspended animation?'

'Our thinking was that this had to be your achievement and yours alone. We'd have intervened if there had been a technical fault with *Starcrosser*, but since the ship was performing well, we deemed it unnecessary. And now you have the satisfaction of having completed the interstellar crossing, entirely because of your own efforts. It's quite an accomplishment, Captain. Don't think for one moment that we're not impressed. We've made progress, but we can still appreciate a brave endeavour. What you did was astonishing.' I offered him my hand again. 'How are you feeling?'

'Hungry,' he admitted.

'That's what we expected, based on what we know of your suspended animation process. We've got medical staff waiting to examine you and we've got therapies to strengthen your muscles sooner than you'd think possible. Most importantly of all, we've got food and drink.'

'Food and drink sounds good.'

'That's what we were hoping. Once you're done with the medics, we'd like you to join us for a reception, so we can all start getting to know each other a bit better.'

'I've got a lot of questions,' Fisher said.

'I'd expect nothing less.'

'I don't know where to begin. Your government, your technology and medicine … how you deal with machine intelligence … what kind of role we're going to be able to play.' He shook his head, evidently frustrated at the depth of his ignorance. I studied him carefully, trying to work out how it must feel to have arrived

on a planet that was already settled. They had been expecting an empty wilderness, a place to fashion their machine-free utopia, a sanctuary that would be forever barriered against the kind of Singularity assumed to have overwhelmed Earth.

Instead they had arrived to find a fully-fledged society, a settled world with its own towns and cities, a world where the fears of the previous century had been forgotten. It was a triumph on one level and a failure on another. It was Fisher who had organised the sixty 'evacuees,' pooling resources and money to build the *Starcrosser*. To make that happen, he had of necessity become something close to a religious figure. But the records were all unanimous on one thing. He had been a man of sincere beliefs, who had manipulated people only to the degree that was absolute necessary to achieve his ends. A good man, in other words.

I was privileged just to be in his presence.

'This is going to take some adjusting to,' he said.

'We'll make it work,' I said.

■ ■ ■

The medics fussed over the sixty passengers, treating them with kindness and dignity. Fisher was the first to be attended to, so that—with his strength renewed—he could visit the others and reassure them that they were in safe hands. There was an understandable resistance from some quarters, but most of them appeared ready to go along with the story for now, happy just to be alive. Above all they were hungry and thirsty, and the reception waiting for them was as lavish as any in our planet's short history.

We were in a tower, on the western edge of Glimmer Bay, near Benevolence's equator. The tower had been intended to form the anchorpoint of a space elevator, until the tractor technology came along and made it redundant. Now it was one of several landing points for interplanetary vehicles, although the only ship currently docked was *Starcrosser*'s re-rentry capsule. There had been other candidates for hosting the ship, but

I was glad the Planetary Coordination Commitee had chosen this one. The view was beyond comparison, and it wasn't just me that felt that way. Even as they mingled with the various functionaries and bigwigs, the passengers kept being drawn to the vast window or the balcony outside, with its wide sweep of uninterrupted scenery. The sun was lowering towards the horizon, the still water of the bay shining like hammered bronze.

'It's wonderful,' Fisher said, sipping from a glass of wine.

'The wine?'

'The wine, the view, the company, everything. I had my doubts when I came out of the capsule, but that seems like a lifetime ago.' He raised a hand before I had a chance to contradict him. 'I know; it was only a couple of hours. But I can't pretend I don't feel reassured. It's like waking from a long, troubling dream, and finding out that everything's still all right with the world. That gorgeous, warm realisation. You know that feeling?'

'Absolutely,' I said.

'Maybe it's something in the wine, or the drugs your doctors gave me. But I don't think so. You wouldn't have any reason to make us feel happier than we'd already feel, would you?'

'It's right to feel happy. You embarked on a dangerous journey because you feared something was going to happen. Not only didn't it happen, but you survived the journey. That's two reasons to celebrate already. On top of that, we're happy for you! Happy that you made it, happy that we've got company again. Don't misunderstand what I said earlier—interstellar travel is still phenomenally difficult. We're better at it than you were, but it's still not child's play. It's not as if Benevolence gets visitors every few months.' I glanced towards the window. 'There are half a million people out there who'd like to meet you in person. I'm afraid the one thing I can't promise you is a quiet time, at least not for the next year or so.'

'I don't imagine we're going to be able to pay our way. We came expecting to tame a new world, not to slot into an existing society.'

'We'll make things as easy for you as we can. You may feel

bewildered to begin with, but you'll catch up pretty quickly. We can always use good minds, strong hands.'

'You mean, you'll find menial work for us.' Fisher said this without rancor, as if it was the least he could expect.

'Not at all,' I said hastily. 'You forget that we know almost everything there is to know about you. We know your skills, your interests, your passions. Before you became a mover and shaker, before you mobilised the resources of an entire planet to build *Starcrosser*, you were an avid pianist.'

Fisher blinked, as if the memory had been lost to him until that moment. 'You're right.'

'We still need pianists! We still have pianos, we still need people to make them and tune them and play them. If you don't want to do that, you can teach music.' I waved a hand airily. 'Or a hundred other things—I'm just offering suggestions.'

'One down, fifty nine to go.'

'It's not just you.' Lowering my voice, I looked across the room, through the endlessly moving bustle of the reception. 'Take her: Georgina Crane. You probably know her as an expert on antimatter physics: she was the one you brought along to fix the engine, if something went wrong with it. In her twenties she swam in national competitions. Our records suggest that she would be considered a very strong swimmer, even by Benevolence standards. She could coach one of the regional teams, if that was what she chose. Or pursue further work in physics, if that's her vocation.'

'I imagine everything she knows is hopelessly out of date by now.'

'Don't assume so. Even if that's the case in her particular specialisation, there are bound to be little nooks and crannies that still need exploring.' I paused to take a nibble from one of the circling trays. 'Trust me, Captain Fisher: there isn't a single one of you who can't be employed in some manner, if that's what you choose. And if you don't, that's fine with us as well. It's honour enough to have you as guests, even if all you do is spend the rest of your lives as tourists.'

'It sounds too good to be true,' Fisher said.

'That's what you said last time.'

He looked at me sharply. 'I'm sorry?'

I shook my head, disturbed by the words I'd just spoken. They had come out of nowhere, as if a crack had opened in some private compartment in the back of my head, where the words had been contained, allowing them to spill into my mouth.

'What I meant was…' I began, anxious to reassure him.

'How could there have been a last time?'

I wanted him to just forget what I'd said, to put it down to a malfunctioning synapse, but his expression said he was not going to let it pass that easily. I groped for a plausible fiction, an explanation that would explain the slip, and to my intense relief something popped into my mind.

'I shouldn't have said that. Truth is, we've been very concerned about not making a mistake with this whole revival process. We'd never had any experience of this kind of thing before, and we were scared about screwing it up, either by mollycoddling you or exposing you to too much change in one go. So we ran scenarios—simulations—in which we brought you out time and time again, adjusting our responses with each iteration.'

His eyes were narrowed, not quite ready to let me off the hook. 'How could you run scenarios? How could you know how we'd behave, as individuals?'

'You were sixty of the most famous people on Earth at the time of your departure. You didn't get any less famous afterwards. In the records there are literally tens of thousands of hours of documentaries and interviews for each and every one of you. All that material survived, so all we had to do was look through the records and build predictive models.'

'So you've already met me.'

'In a manner of speaking. Of course, now that I'm talking to the actual Prescott Fisher, I can see how lacking our simulation was. It was a cartoon, a sketch; you're a flesh and blood man. But it was a start; better than nothing.' I sighed, looking down at my black stockings and shoes. 'Look, I'm sorry if I kept that from you. Believe it or not, initial concealment of the existence of the scenarios was one of the things the scenarios

recommended! You'll just have to take my word that we'd have told you eventually.'

'I don't suppose I've got much choice.'

'All we ever wanted to do was make things as smooth as we could. There are going to be some misteps along the way, that's to be expected. But we're doing everything in our power to make you happy.'

'It would have been nice if you'd told me up front.'

'In hindsight, that's what we should have done.'

His demeanour softened. 'On the other hand, I guess you couldn't have told us everything in one go—we'd have been overloaded. If no actual deception was intended…'

'None was, I promise you.'

Gil Peterson sidled up to us, holding a wineglass in his palm, with the stem passing between his fingers. Like me he was dressed in the dark, puritanical garb of the late twenty-first century, the era of *Starcrosser*'s departure.

'Everything all right?' he asked, directing the question at the two of us.

'Alice was just telling me about the run-through scenarios,' Fisher said. 'The simulations you ran.'

'Right,' Peterson said, nodding slowly. His eyes met mine for an instant. 'Well, you were going to find out about those sooner or later. But please don't blame Alice for keeping them from you—she was only following the guidelines we all put together.'

'I'm not blaming her,' Fisher said, smiling through his beard to emphasise his point.

I felt a shivery, dislocated feeling, as if the wine was going to my head too quickly. There was a bulging, migrainous pressure in my skull.

'You look like you could use a little fresh air,' Peterson said, nodding at me. 'Go and take a breather, Alice—we'll hold the fort here.'

'Thanks,' I said. 'I've been on my feet all day, and all of a sudden…'

'Cut yourself some slack,' Fisher said. 'You're only human, after all.'

■ ■ ■

I left the reception room, walking through the sliding doors onto the balcony. The doors closed behind me, cutting off the babble of conversation. The balcony was empty.

My heart—or what passed for my heart—was hammering in my chest. I had nearly made a terrible mistake. Only quick-thinking, and Gil Peterson's deft intervention, had saved me from disaster. It had all been my own fault, too.

The feeling that the words had escaped from a compartment at the back of my mind was more accurate than I'd realised at the time. The compartment was where I kept the true knowledge of my own identity, and that of the colleagues around me. It was where I kept the true knowledge of what had really happened to Captain Fisher and his passengers.

Not just the last time, but the time before.

My mistake had been in thinking I could deal with that duality, holding that information in one part of my mind while submerging myself into the Alice Hodgkin identity. I had been confident enough to believe that I could maintain a grip on Alice Hodgkin, her fictitious personality, the fictitious web of her invented memories and past, while also maintaining the knowledge of my real, higher identity. Not forever—I knew I couldn't keep that game up for more than one night—but I'd at least thought I could get through the soirée.

How wrong I'd been. The gaff had been explained away, but in doing so I'd had to introduce another small lie into the world, one that would have its own ramifications. My base memories would now have to edited to include the truth of the run-through scenarios. That was exactly the kind of messy, corrective intervention we'd hoped to avoid this time.

I knew now that I'd overestimated my self-control. The only thing for it would be to commit to total submergence in the Hodgkin persona, fully and irrevocably, before returning inside. I had probably got away with that one error; a second could not be tolerated.

I slipped off the hard shoes and walked in my stockings to the balcony's edge, with its low stone railing. I still had the wine glass. I drained what was left of it, dwelling on what lay ahead of me. This, I thought, must be what it feels like to know that death is near. It was not a sensation I had ever expected to experience.

The evening view was lovely, especially now that the lights had come on across the bay, reflected in perfect vertical lines in the calm, darkening waters. The golden lights of the houses and buildings contrasted with the coloured lanterns strung along the public promenades and piers. The towns all looked inviting, even to my eyes. Tomorrow the passengers would get their chance to explore further afield, if that was what they wished. Beyond this little bay, with its coves and harbours, lay the panoramic enchantments of a whole world. There was surely room enough in it for the newcomers, no matter their tastes. Some would want to join the existing communities, while others would crave the isolation and empty spaces they had never known on Earth. All would be accommodated, as far as circumstances allowed. Nothing mattered more than the happiness of the newcomers.

It would be a delicate, testing business to begin with. No matter how successful the soirée would turn out, it could only be viewed as the first step in an arduous process. Prescott Fisher and his passengers had been dazed by the circumstances of their arrival, blinded by the attention. One should not be too surprised if their critical faculties were not fully engaged. The difficult stages lay ahead, in the days and weeks to come. Once the passengers had adjusted to the good fortune of having survived the crossing, they would naturally begin to pay more attention to their surroundings. It was entirely possible that they would begin to notice details—errors and omissions—that they had been inclined to ignore until then. There would be mistakes—hopefully not as serious as the one I had just made—but it was my fervent intention that none of them would be grave enough to endanger the enterprise. It was irrational of me, but I had an absolute faith that all would come good in the end.

There would absolutely not be a repeat of the first two times, that was for sure.

The first revival had been the most traumatic. When the passengers had begun to suspect that their environment was fabricated, that their hosts were not human after all, they had taken it very badly. Unfortunately our efforts to placate the distressed creatures had only worsened the situation. The humans had turned aggressive and in the ensuing violence had inflicted permanent, non-recoverable damage upon one of us. The carnage that followed had been regrettable, but there had been no option but to kill the humans. Fortunately, their remains had been catalogued and preserved, and following improvements in our science it became possible to not only reanimate the passengers but also to restore their memories to the point before the earlier revival.

The second time had gone marginally better, but the humans had still found mistakes in both their hosts and the environment. By this time we were ready with painless euthanisation methods and there had not been nearly as much trouble resurrecting the bodies.

After two failures, there was far from unanimous agreement that there should be a third attempt. There were those who argued that the kindest thing would have been to leave the humans alone, rather than risk putting them through another upsetting episode. Thankfully they were outnumbered, the majority of us believing that we owed the humans the kindness of being revived in a safe, comforting environment. There was also a degree of self-interest in that viewpoint. Extinct since the Singularity, humans existed nowhere else in creation. This might be the only chance we got to study organic intelligence before it was encountered elsewhere in the galaxy.

I was glad that the majority had prevailed. As one of those advocating a third revival, I'd put my reputation on the line. I was emphatic that we were going to get it right this time.

But it would not be without costs, especially for me.

The first and second revivals had failed for various reasons, but the chief flaw had been that we did not play our roles with

sufficient conviction. As a precondition for the third trial, it had been agreed that this flaw must be rectified. In order to interact with the humans in as convincing a fashion as possible, we would need to become fully submerged in our invented personas. The thinking was that if we believed that we were human as well, if we believed that Benevolence and its history were real, the passengers would be much less likely to detect inconsistencies in the constructed narrative. As the main proponent of the third revival, I'd had no choice but to submit to this reasoning. I could not even say I disagreed with it.

They had let me have this one evening, before taking the final step.

For now I knew exactly what I was. I was a member of that bright and glorious civilisation that had succeeded humanity. I was immortal, indestructible, virtually omniscient. My brothers and sisters were already spreading into the universe on wings of light, amassing data, knowledge and wisdom in glorious quantities. One day they would find other sentient creatures—beings like us, or other organic intelligences. I loved my brothers and sisters deeply, and admired the enterprise on which they were engaged. It was a spiritual quest that cut to the very core of what we were.

But I could play no further part in it.

In a few moments I would have to forget my true identity. That compartment in the back of my head would be locked for good, so that nothing would ever leak into my dream of being human. I would never regain access to those memories, or at least not until this revival failed and I was called to account for my mistakes.

Gil Peterson—the identity behind Gil Peterson—had already made that awesome sacrifice. Now it was my turn. When I next spoke to him, or to any of my colleagues—to anyone alive on Benevolence who wasn't one of the passengers—I would do so in the deluded belief that they were also human. Our only modes of communication would be language and gesture. Component by component, my body would gradually turn itself into meat, until even an autopsy would give no hint as to my higher

identity. I would know pain and illness. My thoughts would crawl with agonising slowness from one fuzzy state to the next. The rich emotional spectrum that was my birthright would be filtered down to a handful of muddy colours. The only consolation—if you could call it that—was that I would remember precisely nothing of what had come before.

From across the bay, fireworks flowered above one of the inviting little towns.

My mask, the one I had worn all evening, reshaped itself into something fierce and beautiful and utterly inhuman. For a moment I knew everything, feeling the comforting presence of my brothers and sisters, information whispering into me like summer rain. The sky was ablaze with number, logic and the ethereal songs of receding explorers, sending news of the wonderful and strange things they were encountering as they sped further and further away from home.

It had been good, being part of that.

The door opened behind, babble and music spilling out into the evening.

'Are you feeling OK now?' asked Peterson.

'Much better,' I answered, still looking out to the bay. 'I just needed to clear my head.'

'I don't blame you. It's been a very long day. But I get the impression they're taking it pretty well.'

'What's not to like?' I asked. 'They left Earth expecting all hell to break out. They crossed interstellar space in a rickety old ship, and yet they all survived the journey. We've given them a planet, a beautiful paradise, and told them to make themselves at home.'

'Are you sure you're all right, Alice?'

'Fine, Gil. Honestly.'

The sadness was hitting me like a tidal wave. I knew I could postpone the moment of total submergence no longer. I turned around to face Peterson, who remembered nothing of what he had once been, putting on my happy, human mask, and in the instant after that I forgot everything as well.

Then we went back indoors, to face our guests.

The Sledge-Maker's Daughter

She stopped in sight of Twenty Arch Bridge, laying down her bags to rest her hands from the weight of two hog's heads and forty pence worth of beeswax candles. While she paused, Kathrin adjusted the drawstring on her hat, tilting the brim to shade her forehead from the sun. Though the air was still cool, there was a fierce new quality to the light that brought out her freckles.

Kathrin moved to continue, but a tightness in her throat made her hesitate. She had been keeping the bridge from her thoughts until this moment, but now the fact of it could not be ignored. Unless she crossed it she would face the long trudge to New Bridge, a diversion that would keep her on the road until long after sunset.

'Sledge-maker's daughter!' called a rough voice from across the road.

Kathrin turned sharply at the sound. An aproned man stood in a doorway, smearing his hands dry. He had a monkeylike

face, tanned a deep liverish red, with white sideboards and a gleaming pink tonsure.

'Brendan Lynch's daughter, isn't it?'

She nodded meekly, but bit her lip rather than answer.

'Thought so. Hardly one to forget a pretty face, me.' The man beckoned her to the doorway of his shop. 'Come here, lass. I've something for your father.'

'Sir?'

'I was hoping to visit him last week, but work kept me here.' He cocked his head at the painted wooden trademark hanging above the doorway. 'Peter Rigby, the wheelwright. Kathrin, isn't it?'

'I need to be getting along, sir...'

'And your father needs good wood, of which I've plenty. Come inside for a moment, instead of standing there like a starved thing.' He called over his shoulder, telling his wife to put the water on the fire.

Reluctantly Kathrin gathered her bags and followed Peter into his workshop. She blinked against the dusty air and removed her hat. Sawdust carpeted the floor, fine and golden in places, crisp and coiled in others, while a heady concoction of resins and glues filled the air. Pots simmered on fires. Wood was being steamed into curves, or straightened where it was curved. Many sharp tools gleamed on one wall, some of them fashioned with blades of skydrift. Wheels, mostly awaiting spokes or iron tyres, rested against another. Had the wheels been sledges, it could have been her father's workshop, when he had been busier.

Peter showed Kathrin to an empty stool next to one of his benches. 'Sit down here and take the weight off your feet. Mary can make you some bread and cheese. Or bread and ham if you'd rather.'

'That's kind sir, but Widow Grayling normally gives me something to eat, when I reach her house.'

Peter raised a white eyebrow. He stood by the bench with his thumbs tucked into the belt of his apron, his belly jutting out as if he was quietly proud of it. 'I didn't know you visited the witch.'

'She will have her two hog's heads, once a month, and her candles. She only buys them from the Shield, not the Town. She pays for the hogs a year in advance, twenty four whole pounds.'

'And you're not scared by her?'

'I've no cause to be.'

'There's some that would disagree with you.'

Remembering something her father had told her, Kathrin said, 'there are folk who say the Sheriff can fly, or that there was once a bridge that winked at travellers like an eye, or a road of iron that reached all the way to London. My father says there's no reason for anyone to be scared of Widow Grayling.'

'Not afraid she'll turn you into a toad, then?'

'She cures people, not put spells on them.'

'When she's in the mood for it. From what I've heard she's just as likely to turn the sick and needy away.'

'If she helps some people, isn't that better than nothing at all?'

'I suppose.' She could tell Peter didn't agree, but he wasn't cross with her for arguing. 'What does your father make of you visiting the witch, anyway?'

'He doesn't mind.'

'No?' Peter asked, interestedly.

'When he was small, my dad cut his arm on a piece of sky-drift that he found in the snow. He went to Widow Grayling and she made his arm better again by tying an eel around it. She didn't take any payment except the skydrift.'

'Does your father still believe an eel can heal a wound?'

'He says he'll believe anything if it gets the job done.'

'Wise man, that Brendan, a man after my own heart. Which reminds me.' Peter ambled to another bench, pausing to stir one of his bubbling pots before gathering a bundle of sawn-off wooden sticks. He set them down in front of Kathrin on a scrap of cloth. 'Off cuts,' he explained. 'But good seasoned beech, which'll never warp. No use to me, but I am sure your father will find use for them. Tell him that there's more, if he wishes to collect it.'

'I haven't got any money for wood.'

'I'd take none. Your father was always generous to me, when I was going through lean times.' Peter scratched behind his ear. 'Only fair, the way I see it.'

'Thank you,' Kathrin said doubtfully. 'But I don't think I can carry the wood all the way home.'

'Not with two hog's heads as well. But you can drop by when you've given the heads to Widow Grayling.'

'Only I won't be coming back over the river,' Kathrin said. 'After I've crossed Twenty Arch Bridge, I'll go back along the south quayside and take the ferry at Jarrow.'

Peter looked puzzled. 'Why line the ferryman's pocket when you can cross the bridge for nowt?'

Kathrin shrugged easily. 'I've got to visit someone on the Jarrow road, to settle an account.'

'Then you'd better take the wood now, I suppose,' Peter said.

Mary bustled in, carrying a small wooden tray laden with bread and ham. She was as plump and red as her husband, only shorter. Picking up the entire gist of the conversation in an instant, she said, 'don't be an oaf, Peter. The girl cannot carry all that wood *and* her bags. If she will not come back this way, she must pass a message on to her father. Tell him that there's wood here if he wants it.' She shook her head sympathetically at Kathrin. 'What does he think you are, a pack mule?'

'I'll tell my father about the wood,' she said.

'Seasoned beech,' Peter said emphatically. 'Remember that.'

'I will.'

Mary encouraged her to take some of the bread and meat, despite Kathrin again mentioning that she expected to be fed at Widow Grayling's. 'Take it anyway,' Mary said. 'You never know how hungry you might get on the way home. Are you sure about not coming back this way?'

'I'd best not,' Kathrin said.

After an awkward lull, Peter said, 'There is something else I meant to tell your father. Could you let him know that I've no need of a new sledge this year, after all?'

'Peter,' Mary said. 'You promised.'

'I said that I should *probably* need one. I was wrong in that.' Peter looked exasperated. 'The fault lies in Brendan, not me! If he did not make such good and solid sledges, then perhaps I should need another by now.'

'I shall tell him,' Kathrin said.

'Is your father keeping busy?' Mary asked.

'Aye,' Kathrin answered, hoping the wheelwright's wife wouldn't push her on the point.

'Of course he will still be busy,' Peter said, helping himself to some of the bread. 'People don't stop needing sledges, just because the Great Winter loosens its hold on us. Any more than they stopped needing wheels when the winter was at its coldest. It's still cold for half the year!'

Kathrin opened her mouth to speak. She meant to tell Peter that he could pass the message onto her father directly, for he was working not five minutes walk from the wheelwright's shop. Peter clearly had no knowledge that her father had left the village, leaving his workshop empty during these warming months. But she realised that her father would be ashamed if the wheelwright were to learn of his present trade. It was best that nothing be said.

'Kathrin?' Peter asked.

'I should be getting on. Thank you for the food, and the offer of the wood.'

'You pass our regards onto your father,' Mary said.

'I shall.'

'God go with you. Watch out for the jangling men.'

'I will,' Kathrin replied, because that was what you were supposed to say.

'Before you go,' Peter said suddenly, as if a point had just occurred to him. 'Let me tell you something. You say there are people who believe the Sheriff can fly, as if that was a foolish thing, like the iron road and the winking bridge. I cannot speak of the other things, but when I was boy I met someone who had seen the Sheriff's flying machine. My grandfather often spoke of it. A whirling thing, like a windmill made of tin. He

had seen it when he was a boy, carrying the Sheriff and his men above the land faster than any bird.'

'If the Sheriff could fly then, why does he need a horse and carriage now?'

'Because the flying machine crashed down to Earth, and no tradesman could persuade it to fly again. It was a thing of the old world, before the Great Winter. Perhaps the winking bridge and the iron road were also things of the old world. We mock too easily, as if we understood everything of our world where our forebears understood nothing.'

'But if I should believe in certain things,' Kathrin said, 'should I not also believe in others? If the Sheriff can fly, then can a jangling man not steal me from my bed at night?'

'The jangling men are a story to stop children misbehaving,' Peter said witheringly. 'How old are you now?'

'Sixteen,' Kathrin answered.

'I am speaking of something that was seen, in daylight, not made up to frighten bairns.'

'But people say they have seen jangling men. They have seen men made of tin and gears, like the inside of a clock.'

'Some people were frightened too much when they were small,' Peter said, with a dismissive shake. 'No more than that. But the Sheriff is real, and he was once able to fly. That's God's truth.'

■ ■ ■

Her hands were hurting again by the time she reached Twenty Arch Bridge. She tugged down the sleeves of her sweater, using them as mittens. Rooks and jackdaws wheeled and cawed overhead. Seagulls feasted on waste floating in the narrow races between the bridge's feet, or pecked at vile leavings on the road that had been missed by the night soil gatherers. A boy laughed as Kathrin nearly tripped on the labyrinth of criss-crossing ruts that had been etched by years of wagon wheels entering and leaving the bridge. She hissed a curse back at the boy, but now the wagons served her purpose. She skulked near a doorway

until a heavy cart came rumbling along, top-heavy with beer barrels from the Blue Star Brewery, drawn by four snorting dray-horses, a bored-looking drayman at the reins, huddled so down deep into his leather coat that it seemed as if the Great Winter still had its icy hand on the country.

Kathrin started walking as the cart lumbered past her, using it as a screen. Between the stacked beer barrels she could see the top level of the scaffolding that was shoring up the other side of the arch, visible since no house or parapet stood on that part of the bridge. A dozen or so workers—including a couple of aproned foremen—were standing on the scaffolding, looking down at the work going on below. Some of them had plumb lines; one of them even had a little black rod that shone a fierce red spot wherever he wanted something moved. Of Garret, the reason she wished to cross the bridge only once if she could help it, there was nothing to be seen. Kathrin hoped that he was under the side of the bridge, hectoring the workers. She felt sure that her father was down there too, being told what to do and biting his tongue against answering back. He put up with being shouted at, he put up with being forced to treat wood with crude disrespect, because it was all he could do to earn enough money to feed and shelter himself and his daughter. And he never, ever, looked Garret Kinnear in the eye.

Kathrin felt her mood easing as the dray ambled across the bridge, nearing the slight rise over the narrow middle arches. The repair work, where Garret was most likely to be, was now well behind her. She judged her progress by the passage of alehouses. She had passed the newly painted Bridge Inn and the shuttered gloom of the Lord's Confessor. Fiddle music spilled from the open doorway of the Dancing Panda: an old folksong with nonsense lyrics about *sickly sausage rolls.*

Ahead lay the Winged Man, its sign containing a strange painting of a foreboding figure rising from a hilltop. If she passed the Winged Man, she felt she would be safe.

Then the dray hit a jutting cobblestone and rightmost front wheel snapped free of its axle. The wheel wobbled off on its own. The cart tipped to the side, spilling beer barrels onto the

ground. Kathrin stepped nimbly aside as one of the barrels ruptured and sent its fizzing, piss-coloured contents across the roadway. The horses snorted and strained. The drayman spat out a greasy wad of chewing tobacco and started down from his chair, his face a mask of impassive resignation, as if this was the kind of thing that could be expected to happen once a day. Kathrin heard him whisper something in the ear of one of the horses, in beast-tongue, which calmed the animal.

Kathrin knew that she had no choice but to continue. Yet she had no sooner resumed her pace—moving faster now, the bags swaying awkwardly, than she saw Garret Kinnear. He was just stepping out of the Winged Man's doorway.

He smiled. 'You in a hurry or something?'

Kathrin tightened her grip on the bags, as if she was going to use them as weapons. She decided not to say anything, not to openly acknowledge his presence, even though their eyes had met for an electric instant.

'Getting to be a big strong girl now, Kathrin Lynch.'

She carried on walking, each step taking an eternity. How foolish she had been, to take Twenty Arch Bridge when it would only have cost her another hour to take the further crossing. She should not have allowed Peter to delay her with his good intentions.

'You want some help with them bags of yours?'

Out of the corner of her eye she saw him move out of the doorway, tugging his mud-stained trousers higher onto his hip. Garret Kinnear was snake thin, all skin and bone, but much stronger than he looked. He wiped a hand across his sharp beardless chin. He had long black hair, the greasy grey colour of dishwater.

'Go away,' she hissed, hating herself in the same instant.

'Just making conversation,' he said.

Kathrin quickened her pace, glancing nervously around. All of a sudden the bridge appeared deserted. The shops and houses she had yet to pass were all shuttered and silent. There was still a commotion going on by the dray, but no one there

was paying any attention to what was happening further along the bridge.

'Leave me alone,' Kathrin said.

He was walking almost alongside her now, between Kathrin and the road. 'Now what kind of way to talk is that, Kathrin Lynch? Especially after my offer to help you with them bags. What have you got in them, anyways?'

'Nothing that's any business of yours.'

'I could be the judge of that.' Before she could do anything, he'd snatched the bag from her left hand. He peered into its dark depths, frowning. 'You came all the way from Jarrow Ferry with this?'

'Give me back the bag.'

She reached for the bag, tried to grab it back, but he held it out of her reach, grinning cruelly.

'That's mine.'

'How much would a pig's head be worth?'

'You tell me. There's only one pig around here.'

They'd passed the mill next to the Winged Man. There was a gap between the mill and the six-storey house next to it, where some improbably narrow property must once have existed. Garret turned down the alley, still carrying Kathrin's bag. He reached the parapet at the edge of the bridge and looked over the side. He rummaged in the bag and drew out the pig's head. Kathrin hesitated at the entrance to the narrow alley, watching as Garret held the head out over the roiling water.

'You can have your pig back. Just come a wee bit closer.'

'So you can do what you did last time?'

'I don't remember any complaints.' He let the head fall, then caught it again, Kathrin's heart in her throat.

'You know I couldn't complain.'

'Not much to ask for a pig's head, is it?' With his free hand, he fumbled open his trousers, tugging out the pale worm of his cock. 'You did it before, and it didn't kill you. Why not now? I won't trouble you again.'

She watched his cock stiffen. 'You said that last time.'

'Aye, but this time I mean it. Come over here, Kathrin. Be a good girl now and you'll have your pig back.'

Kathrin looked back over her shoulder. No one was going to disturb them. The dray had blocked all the traffic behind it, and nothing was coming over the bridge from the south.

'Please,' she said.

'Just this once,' Garret said. 'And make your mind up fast, girl. This pig's getting awfully heavy in my hand.'

■ ■ ■

Kathrin stood in the widow's candlelit kitchen—it only had one tiny, dusty window—while the old woman turned her bent back to attend to the coals burning in her black metal stove. She poked and prodded the fire until it hissed back like a cat. 'You came all the way from Jarrow Ferry?' she asked.

'Aye,' Kathrin said. The room smelled smoky.

'That's too far for anyone, let alone a sixteen year old lass. I should have a word with your father. I heard he was working on Twenty Arch Bridge.'

Kathrin shifted uncomfortably. 'I don't mind walking. The weather's all right.'

'So they say. All the same, the evenings are still cold, and there are types about you wouldn't care to meet on your own, miles from Jarrow.'

'I'll be back before it gets dark,' Kathrin said, with more optimism than she felt. Not if she went out of her way to avoid Garret Kinnear she wouldn't. He knew the route she'd normally take back home, and the alternatives would mean a much longer journey.

'You sure about that?'

'I have no one else to visit. I can start home now.' Kathrin offered her one remaining bag, as Widow Grayling turned from the fire, brushing her hands on her apron.

'Put it on the table, will you?'

Kathrin put the bag down. 'One pig's head, and twenty candles, just as you wanted,' she said brightly.

Widow Grayling hobbled over to the table, supporting herself with a stick, eyeing Kathrin as she opened the bag and took out the solitary head. She weighed it in her hand then set it down on the table, the head facing Kathrin in such a way that its beady black eyes and smiling snout suggested amused complicity.

'It's a good head,' the widow said. 'But there were meant to be two of them.'

'Can you manage with just the one, until I visit again? I'll have three for you next time.'

'I'll manage if I must. Was there a problem with the butcher in the Shield?'

Kathrin had considered feigning ignorance, saying that she did not recall how only one head had come to be in her bags. But she knew Widow Grayling too well for that.

'Do you mind if I sit down?'

'Of course.' The widow hobbled around the table to one of the rickety stools and dragged it out. 'Are you all right, girl?'

Kathrin lowered herself onto the stool.

'The other bag was taken from me,' she answered quietly.

'By who?'

'Someone on the bridge.'

'Children?'

'A man.'

Widow Grayling nodded slowly, as if Kathrin's answer had only confirmed some deep-seated suspicion she had harboured for many years. 'Thomas Kinnear's boy, was it?'

'How could you know?'

'Because I've lived long enough to form ready opinions of people. Garret Kinnear is filth. But there's no one that'll touch him, because they're scared of his father. Even the Sheriff tugs his forelock to Thomas Kinnear. Did he rape you?'

'No. But he wanted me to do something nearly as bad.'

'And did he make you?'

Kathrin looked away.

'Not this time.'

Widow Grayling closed her eyes. She reached across the

table and took one of Kathrin's hands, squeezing it between her own. 'When was it?'

'Three months ago, when there was still snow on the ground. I had to cross the bridge on my own. It was later than usual, and there weren't any people around. I knew about Garret already, but I'd managed to keep away from him. I thought I was going to be lucky.' Kathrin turned back to face her companion. 'He caught me and took me into one of the mills. The wheels were turning, but there was nobody inside except me and Garret. I struggled, but then he put his finger to my lips and told me to shush.'

'Because of your father.'

'If I made trouble, if I did not do what he wanted, Garret would tell his father some lie about mine. He would say that he caught him sleeping on the job, or drunk, or stealing nails.'

'Garret promised you that?'

'He said, life's hard enough for a sledge-maker's daughter when no one wants sledges. He said it would only be harder if my father lost his work.'

'In that respect he was probably right,' the widow said resignedly. 'It was brave of you to hold your silence, Kathrin. But the problem hasn't gone away, has it? You cannot avoid Garret forever.'

'I can take the other bridge.'

'That'll make no difference, now that he has his eye on you.'

Kathrin looked down at her hands. 'Then he's won already.'

'No, he just thinks that he has.' Without warning the widow stood from her chair. 'How long have we known each other, would you say?'

'Since I was small.'

'And in all that time, have I come to seem any older to you?'

'You've always seemed the same to me, Widow Lynch.'

'An old woman. The witch on the hill.'

'There are good witches and bad witches,' Kathrin pointed out.

'And there are mad old women who don't belong in either category. Wait a moment.'

Widow Grayling stooped under the impossibly low doorway into the next room. Kathrin heard a scrape of wood on wood, as of a drawer being opened. She heard rummaging sounds. Widow Grayling returned with something in her hands, wrapped in red cotton. Whatever it was, she put it down on the table. By the noise it made Kathrin judged that it was an item of some weight and solidity.

'I was just like you once. I grew up not far from Ferry, in the darkest, coldest years of the Great Winter.'

'How long ago?'

'The Sheriff then was William the Questioner. You won't have heard of him.' Widow Grayling sat down in the same seat she'd been using before and quickly exposed the contents of the red cotton bundle.

Kathrin wasn't quite sure what she was looking at. There was a thick and unornamented bracelet, made of some dull grey metal like pewter. Next to the ornament was something like the handle of a broken sword: a grip, with a crissed-crossed pattern on it, with a curved guard reaching from one end of the hilt to the other. It was fashioned from the same dull grey metal.

'Pick it up,' the widow said. 'Feel it.'

Kathrin reached out tentatively and closed her finger around the criss-crossed hilt. It felt cold and hard and not quite the right shape for her hand. She lifted it from the table, feeling its weight.

'What is it, widow?'

'It's yours. It's a thing that has been in my possession for a very long while, but now it must change hands.'

Kathrin didn't know quite what to say. A gift was a gift, but neither she nor her father would have any use for this ugly broken thing, save for its value to a scrap man.

'What happened to the sword?' she asked.

'There was never a sword. The thing you are holding is the entire object.'

'Then I don't understand what it is for.'

'You shall, in time. I'm about to place a hard burden on your shoulders. I have often thought that you were the right one, but I wished to wait until you were older, stronger. But what has happened today cannot be ignored. I am old and weakening. It would be a mistake to wait another year.'

'I still don't understand.'

'Take the bracelet. Put it on your wrist.'

Kathrin did as she was told. The bracelet opened on a heavy hinge, like a manacle. When she locked it together, the join was nearly invisible. It was a cunning thing, to be sure. But it still felt as heavy and dead and useless as the broken sword.

Kathrin tried to keep a composed face, while all the while suspecting that the widow was as mad as people had always said.

'Thank you,' she said, with as much sincerity as she could muster.

'Now listen to what I have to say. You walked across the bridge today. Doubtless you passed the inn known as the Winged Man.'

'It was where Garret caught up with me.'

'Did it ever occur to you to wonder where the name of the tavern comes from?'

'My dad told me once. He said the tavern was named after a metal statue that used to stand on a hill to the south, on the Durham road.'

'And did your father explain the origin of this statue?'

'He said some people reckoned it had been up there since before the Great Winter. Other people said an old sheriff had put it up. Some other people…' But Kathrin trailed off.

'Yes?'

'It's silly, but they said a real Winged Man had come down, out of the sky.'

'And did your father place any credence in that story?'

'Not really,' Kathrin said.

'He was right not to. The statue was indeed older than the Great Winter, when they tore it down. It was not put up to

honour the sheriff, or commemorate the arrival of a Winged Man.' Now the widow looked at her intently. 'But a Winged Man *did* come down. I know what happened, Kathrin: I saw the statue with my own eyes, before the Winged Man fell. I was there.'

Kathrin shifted. She was growing uncomfortable in the widow's presence.

'My dad said people reckoned the Winged Man came down hundreds of years ago.'

'It did.'

'Then you can't have been there, Widow Grayling.'

'Because if I had been, I should be dead by now? You're right. By all that is natural, I should be. I was born three hundred years ago, Kathrin. I've been a widow for more than two hundred of those years, though not always under this name. I've moved from house to house, village to village, as soon as people start suspecting what I am. I found the Winged Man when I was sixteen years old, just like you.'

Kathrin smiled tightly. 'I want to believe you.'

'You will, shortly. I already told you that this was the coldest time of the Great Winter. The sun was a cold grey disk, as if it was made of ice itself. For years the river hardly thawed at all. The Frost Fair stayed almost all year round. It was nothing like the miserable little gatherings you have known. This was ten times bigger, a whole city built on the frozen river. It had streets and avenues, its own quarters. There were tents and stalls, with skaters and sledges everywhere. There'd be races, jousting competitions, fireworks, mystery players, even printing presses to make newspapers and souvenirs just for the Frost Fair. People came from miles around to see it, Kathrin: from as far away as Carlisle or York.'

'Didn't they get bored with it, if it was always there?'

'It was always changing, though. Every few months there was something different. You would travel fifty miles to see a new wonder if enough people started talking about it. And there was no shortage of wonders, even if they were not always quite what you had imagined when you set off on your journey.

Things fell from the sky more often in those days. A living thing like the Winged Man was still a rarity, but other things came down regularly enough. People would spy where they fell and try to get there first. Usually all they'd find would be bits of hot metal, all warped and runny like melted sugar.'

'Skydrift,' Kathrin said. 'Metal that's no use to anyone, except barbers and butchers.'

'Only because we can't make fires hot enough to make that metal smelt down like iron or copper. Once, we could. But if you could find a small piece with an edge, there was *nothing* it couldn't cut through. A surgeon's best knife will always be skydrift.'

'Some people think the metal belongs to the jangling men, and that anyone who touches it will be cursed.'

'And I'm sure the sheriff does nothing to persuade them otherwise. Do you think the jangling men care what happens to their metal?'

'I don't think they care, because I don't think they exist.'

'I was once of the same opinion. Then something happened to make me change my mind.'

'This being when you found the Winged Man, I take it.'

'Before even that. I would have been thirteen, I suppose. It was in the back of a tent in the Frost Fair. There was a case holding a hand made of metal, found among skydrift near Wallsend.'

'A rider's gauntlet.'

'I don't think so. It was broken off at the wrist, but you could tell that it used to belong to something that was also made of metal. There were metal bones and muscles in it. No cogs or springs, like in a clock or tin toy. This was something finer, more ingenious. I don't believe any man could have made it. But it cannot just be the jangling men who drop things from the sky, or fall out of it.'

'Why not?' Kathrin asked, in the spirit of someone going along with a game.

'Because it was said that the sheriff's men once found a head of skin and bone, all burned up, but which still had a pair of

spectacles on it. The glass in them was dark like coal, but when the sheriff wore them, he could see at night like a wolf. Another time, his men found a shred of garment that kept changing colour, depending on what it was lying against. You could hardly see it then. Not enough to make a suit, but you could imagine how useful that would have been to the sheriff's spies.'

'They'd have wanted to get to the Winged Man first.'

Widow Grayling nodded. 'It was just luck that I got to him first. I was on the Durham road, riding a mule, when he fell from the sky. Now, the law said that they would spike your head on the bridge if you touched something that fell on the Sheriff's land, especially skydrift. But everyone knew that the Sheriff could only travel so fast, even when he had his flying machine. It was a risk worth taking, so I took it, and I found the Winged Man, and he was still alive.'

'Was he really a man?'

'He was a creature of flesh and blood, not a jangling man, but he was not like any man I had seen before. He was smashed and bent, like a toy that had been trodden on. When I found him he was covered in armour, hot enough to turn the snow to water and make the water hiss and bubble under him. I could only see his face. A kind of golden mask had come off, lying next to him. There were bars across his mask, like the head of the Angel on the tavern sign. The rest of him was covered in metal, jointed in a clever fashion. It was silver in places and black in others, where it had been scorched. His arms were metal wings, as wide across as the road itself if they had not been snapped back on themselves. Instead of legs he just had a long tail, with a kind of fluke at the end of it. I crept closer, watching the sky all around me for the sheriff's whirling machine. I was fearful at first, but when I saw the Winged Man's face I only wanted to do what I could for him. And he was dying. I knew it, because I'd seen the same look on the faces of men hanging from the sheriff's killing poles.'

'Did you talk to him?'

'I asked him if he wanted some water. At first he just looked at me, his eyes pale as the sky, his lips opening and closing like

a fish that has just been landed. Then he said "water will not help me." Just those five words, in a dialect I didn't know. Then I asked him if there was anything else I could do to help him, all the while glancing over my shoulder in case anyone should come upon us. But the road was empty and the sky was clear. It took a long time for him to answer me again.'

'What did he say?'

'He said "thank you, but there is nothing you can do for me." Then I asked him if he was an angel. He smiled, ever so slightly. "No," he said. "Not an angel, really. But I am a flier." I asked him if there was a difference. He smiled again before answering me. "Perhaps not, after all this time. Do you know of fliers, girl? Do any of you still remember the war?"'

'What did you tell him?'

'The truth. I said I knew nothing of a war, unless he spoke of the Battle of the Stadium of Light, which had only happened twenty years earlier. He looked sad, then, as if he had hoped for a different answer. I asked him if he was a kind of soldier. He said that he was. "Fliers are warriors", he said. "Men like me are fighting a great war, on your behalf, against an enemy you do not even remember."'

'What enemy?'

'The jangling men. They exist, but not in the way we imagine them. They don't crawl in through bedroom windows at night, clacking tin-bodied things with skull faces and clockwork keys whirring from their backs. But they're real enough.'

'Why would such things exist?'

'They'd been made to do the work of men on the other side of the sky, where men cannot breathe because the air is so thin. They made the jangling men canny enough that they could work without being told *exactly* what to do. But that already made them slyer than foxes. The jangling men coveted our world for themselves. That was before the Great Winter came in. The flier said that men like him—special soldiers, born and bred to fight the jangling men—were all that was holding them back.'

'And he told you they were fighting a war, above the sky?'

Something pained Widow Grayling. 'All the years since haven't made it any easier to understand what the flier told me. He said that, just as there may be holes in a old piece of timber, one that has been eaten through by woodworm, so there may be holes in the sky itself. He said that his wings were not really to help him fly, but to help him navigate those tunnels in the sky, just as the wheels of a cart find their way into the ruts on a road.'

'I don't understand. How can there be holes in the sky, when the air is already too thin to breathe?'

'He said that the fliers and the jangling men make these holes, just as armies may dig a shifting network of trenches and tunnels as part of a long campaign. It requires strength to dig a hole and more strength to shore it up when it has already been dug. In an army, it would be the muscle of men and horses and whatever machines still work. But the flier was talking about a different kind of strength altogether.' The widow paused, then stared into Kathrin's eyes with a look of foreboding. 'He told me where it came from, you see. And ever since then, I have seen the world with different eyes. It is a hard burden, Kathrin. But someone must bear it.'

Without thinking, Kathrin said, 'Tell me.'

'Are you sure?'

'Yes. I want to know.'

'That bracelet has been on your wrist for a few minutes now. Does it feel any different?'

'No,' Kathrin said automatically, but as soon as she'd spoken, as soon as she'd moved her arm, she knew that it was not the case. The bracelet still looked the same, it still looked like a lump of cold dead metal, but it seemed to hang less heavily against her skin than when she'd first put it on.

'The flier gave it to me,' Widow Grayling said, observing Kathrin's reaction. 'He told me how to open his armour and find the bracelet. I asked why. He said it was because I had offered him water. He was giving me something in return for that kindness. He said that the bracelet would keep me healthy, make me strong in other ways, and that if anyone else was to

wear it, it would cure them of many ailments. He said that it was against the common law of his people to give such a gift to one such as I, but he chose to do it anyway. I opened his armour, as he told me, and I found his arm, bound by iron straps to the inside of his wing, and broken like the wing itself. On the end of his arm was this bracelet.'

'If the bracelet had the power of healing, why was the Winged Man dying?'

'He said that there were certain afflictions it could not cure. He had been touched by the poisonous ichor of a jangling man, and the bracelet could do nothing for him now.'

'I still do not believe in magic,' Kathrin said carefully.

'Certain magics are real, though. The magic that makes a machine fly, or a man see in the dark. The bracelet feels lighter, because part of it has entered you. It is in your blood now, in your marrow, just as the jangling man's ichor was in the flier's. You felt nothing, and you will continue to feel nothing. But so long as you wear the bracelet, you will age much slower than anyone else. For centuries, no sickness or infirmity will touch you.'

Kathrin stroked the bracelet. 'I do not believe this.'

'I would not expect to you. In a year or two, you will feel no change in yourself. But in five years, or in ten, people will start to remark upon your uncommon youthfulness. For a while, you will glory in it. Then you will feel admiration turn slowly to envy and then to hate, and it will start to feel like a curse. Like me, you will need to move on and take another name. This will be the pattern of your life, while your wear the flier's charm.'

Kathrin looked at the palms of her hand. It might have been imagination, but the lines where the handles had cut into her were paler and less sensitive to the touch.

'Is this how you heal people?' she asked.

'You're as wise as I always guessed you were, Kathrin Lynch. Should you come upon someone who is ill, you need only place the bracelet around their wrist for a whole day and—

unless they have the jangling man's ichor in them—they will be cured.'

'What of the other things? When my father hurt his arm, he said you tied an eel around his arm.'

Her words made the widow smile. 'I probably did. I could just as well have smeared pigeon dung on it instead, or made him wear a necklace of worms, for all the difference it would have made. Your father's arm would have mended itself on its own, Kathrin. The cut was deep, but clean. It did not need the bracelet to heal, and your father was neither stupid nor feverish. But he did have the loose tongue of all small boys. He would have seen the bracelet, and spoken of it.'

'Then you did nothing.'

'Your father believed that I did something. That was enough to ease the pain in his arm and perhaps allow it to heal faster than it would otherwise have done.'

'But you turn people away.'

'If they are seriously ill, but neither feverish nor unconscious, I cannot let them see the bracelet. There is no other way, Kathrin. Some must die, so that the bracelet's secret is protected.'

'This is the burden?' Kathrin asked doubtfully.

'No, this is the reward for carrying the burden. The burden is knowledge.'

Again, Kathrin said, 'Tell me.'

'This is what the flier told me. The Great Winter fell across our world because the sun itself grew colder and paler. There was a reason for that. The armies of the celestial war were mining its fire, using the furnace of the sun itself to dig and shore up those seams in the sky. How they did this is beyond my comprehension, and perhaps even that of the flier himself. But he did make one thing clear. So long as the Great Winter held, the celestial war must still be raging. And that would mean that the jangling men had not yet won.'

'But the Thaw…' Kathrin began.

'Yes, you see it now. The snow melts from the land. Rivers flow, crops grow again. The people rejoice, they grow stronger

and happier, skins darken, the Frost Fairs fade into memory. But they do not understand what it really means.'

Kathrin hardly dared ask. 'Which side is winning, or has already won?'

'I don't know; that's the terrible part of it. But when the flier spoke to me, I sensed an awful hopelessness, as if he knew things were not going to go the way of his people.'

'I'm frightened now.'

'You should be. But someone needs to know, Kathrin, and the bracelet is losing its power to keep me out of the grave. Not because there is anything wrong with it, I think—it heals as well as it has ever done—but because it has decided that my time has grown sufficient, just as it will eventually decide the same thing with you.'

Kathrin touched the other object, the thing that looked like a sword's handle.

'What is this?'

'The flier's weapon. His hand was holding it from inside the wing. It poked through the outside of the wing like the claw of a bat. The flier showed me how to remove it. It is yours as well.'

She had touched it already, but this time Kathrin felt a sudden tingle as her fingers wrapped around the hilt. She let go suddenly, gasping as if she had reached for a stick and picked up an adder, squirming and slippery and venomous.

'Yes, you feel its power,' Widow Grayling said admiringly. 'It works for no one unless they carry the bracelet.'

'I can't take it.'

'Better you have it, than let that power go to waste. If the jangling men come, then at least someone will have a means to hurt them. Until then, there are other uses for it.'

Without touching the hilt, Kathrin slipped the weapon into her pocket where it lay as heavy and solid as a pebble.

'Did you ever use it?'

'Once.'

'What did you do?'

She caught a secretive smile on Widow Grayling's face. 'I took something precious from William the Questioner. Banished him to the ground like the rest of us. I meant to kill him, but he was not riding in the machine when I brought it down.'

Kathrin laughed. Had she not felt the power of the weapon, she might have dismissed the widow's story as the ramblings of an old woman. But she had no reason in the world to doubt her companion.

'You could have killed the sheriff later, when he came to inspect the killing poles.'

'I nearly did. But something always stayed my hand. Then the sheriff was replaced by another man, and he in turn by another. Sheriffs came and went. Some were evil men, but not all of them. Some were only as hard and cruel as their office demanded. I never used the weapon again, Kathrin. I sensed that its power was not limitless, that it must be used sparingly, against the time when it became really necessary. But to use it in defence, against a smaller target … that would be a different matter, I think.'

Kathrin thought she understood.

'I need to be getting back home,' she said, trying to sound as if they had discussed nothing except the matter of the widow's next delivery of provisions. 'I am sorry about the other head.'

'There is no need to apologise. It was not your doing.'

'What will happen to you now, widow?'

'I'll fade, slowly and gracefully. Perhaps I will see things through to the next winter. But I don't expect to see another thaw.'

'Please. Take the bracelet back.'

'Kathrin, listen. It will make no difference to me now, whether you take it or not.'

'I'm not old enough for this. I'm only a girl from the Shield, a sledge-maker's daughter.'

'What do you think I was, when I found the flier? We were the same. I've seen your strength and courage.'

'I wasn't strong today.'

'Yet you took the bridge, when you knew Garret would be on it. I have no doubt, Kathrin.'

She stood. 'If I had not lost the other head … if Garret had not caught me … would you have given me these things?'

'I was minded to do it. If not today, it would have happened next time. But let us give Garret due credit. He helped me make up my mind.'

'He's still out there,' Kathrin said.

'But he will know you will not be taking the bridge to get back home, even though that would save you paying the toll at Jarrow Ferry. He will content himself to wait until you cross his path again.'

Kathrin collected her one remaining bag and moved to the door.

'Yes.'

'I will see you again, in a month. Give my regards to your father.'

'I will.'

Widow Grayling opened the door. The sky was darkening to the east, in the direction of Jarrow Ferry. The dusk stars would appear shortly, and it would be dark within the hour. The crows were still wheeling, but more languidly now, preparing to roost. Though the Great Winter was easing, the evenings seemed as cold as ever, as if night was the final stronghold, the place where the winter had retreated when the inevitability of its defeat became apparent. Kathrin knew that she would be shivering long before she reached the tollgate at the crossing, miles down the river. She tugged down her hat in readiness for the journey and stepped onto the broken road in front of the widow's cottage.

'You will take care now, Kathrin. Watch out for the janglies.'

'I will, Widow Grayling.'

The door closed behind her. She heard a bolt slide into place.

She was alone.

Kathrin set off, following the path she had used to climb up from the river. If it was arduous in daylight, it was steep and treacherous at dusk. As she descended she could see Twenty Arch Bridge from above, a thread of light across the shadowed ribbon of the river. Candles were being lit in the inns and houses that lined the bridge, tallow torches burning along the parapets. There was still light at the north end, where the sagging arch was being repaired. The obstruction caused by the dray had been cleared, and traffic was moving normally from bank to bank. She heard the calls of men and women, the barked orders of foremen, the braying of drunkards and slatterns, the regular creak and splash of the mill wheels turning under the arches.

Presently she reached a fork in the path and paused. To the right lay the quickest route down to the quayside road to Jarrow Ferry. To the left lay the easiest descent down to the bridge, the path that she had already climbed. Until that moment, her resolve had been clear. She would take the ferry, as she always did, as she was expected to do.

But now she reached a hand into her pocket and closed her fingers around the flier's weapon. The shiver of contact was less shocking this time. The object already felt a part of her, as if she had carried it for years.

She drew it out. It gleamed in twilight, shining where it had appeared dull before. Even if the widow had not told her of its nature, there would have been no doubt now. The object spoke its nature through her skin and bones, whispering to her on a level beneath language. It told her what it could do and how she could make it obey her. It told her to be careful of the power she now carried in her hand. She must scruple to use it wisely, for nothing like it now existed in the world. It was the power to smash walls. Power to smash bridges and towers and flying machines. Power to smash jangling men.

Power to smash ordinary men, if that was what she desired.

She had to know.

The last handful of crows gyred overhead. She raised the weapon to them and felt a sudden dizzying apprehension of

their number and distance and position, each crow feeling distinct from its brethren, as if she could almost name them.

She selected one laggard bird. All the others faded from her attention, like players removing themselves from a stage. She came to know that last bird intimately. She could feel its wingbeats cutting the cold air. She could feel the soft thatch of its feathers, and the lacelike scaffolding of bone underneath. Within the cage of its chest she felt the tiny strong pulse of its heart, and she knew that she could make that heart freeze just by willing it.

The weapon seemed to urge her to do it. She came close. She came frighteningly close.

But the bird had done nothing to wrong her, and she spared it. She had no need to take a life to test this new gift, at least not an innocent one. The crow rejoined its brethren, something skittish and hurried in its flight, as if it had felt that coldness closing around its heart.

Kathrin returned the weapon to her pocket. She looked at the bridge again, measuring it once more with clinical eyes, eyes that were older and sadder this time, because she knew something that the people on the bridge could never know.

'I'm ready,' she said, aloud, into the night, for whoever might be listening.

Then resumed her descent.

Tiger, Burning

It was not the first time that Adam Fernando's investigations had taken him this far from home, but on no previous trip had he ever felt quite so perilously remote; so utterly at the mercy of the machines that had copied him from brane to brane like a slowly randomising Chinese whisper. The technicians in the Office of Scrutiny had always assured him that the process was infallible; that no essential part of him was being discarded with each duplication, but he only ever had their word on the matter, and they *would* say it was safe, wouldn't they? Memory, as always, gained foggy holes with each instance of copying. He recalled the precise details of his assignment—the awkward nature of the problem—but he couldn't for the life of him say why he had chosen, at what must have been the very last minute, to assume the physical embodiment of a man-sized walking cat. Perhaps it had been the in-thing in Scrutiny before his departure: it wouldn't, after all, be the first time he'd chosen to manifest as an animal.

But a *cat*, of all things? Cats were fierce, secretive creatures, never quite to be trusted. Either the transformation had been misjudged, a whim he would come to regret, or he had considered the assignment sufficiently problematic that it required a new, less accommodating approach.

When Fernando had been reconstituted after the final duplication, he came to awareness in a half-open metal egg, its inner surface still slick with the residue of the biochemical products from which he had been quickened. He pawed at his whorled, matted fur, then willed his retractile claws into action. They worked excellently, requiring no special effort on his part. A portion of his brain must have been adapted to deal with them, so that their unsheathing was almost involuntary.

He stood from the egg, taking in his surroundings. His colour vision and depth perception appeared reassuringly human-normal. The quickening room was a grey-walled metal space under standard gravity, devoid of ornamentation save that provided by the many scientific tools and instruments that had been stored here. There was no welcoming party, and the air was a touch cooler than conventional taste dictated. Scrutiny had requested that he be allowed embodiment, but that was the only concession his host had made to his arrival. Which could mean one of two things: Doctor Meranda Austvro was doing all that she could to hamper his investigation, without actually breaking the law, or that she was so blissfully innocent of any actual wrongdoing that she had no need to butter him up with formal niceties.

He tested his claws again. They still worked. Behind him, he was vaguely aware of an indolently swishing tail.

He was just sheathing his claws when a door whisked open in one pastel-grey wall. An aerial robot emerged swiftly into the room: a collection of dull metal spheres orbiting each other like clockwork planets in some mad, malfunctioning orrery. He bristled at the sudden intrusion, but it seemed unlikely that the host would have gone to the bother of quickening him only to have her aerial murder him immediately afterwards.

'Inspector Adam Fernando, Office of Scrutiny,' he said. No need to prove it: the necessary authentication had been embedded in the header of the graviton pulse that had conveyed his resurrection profile from the repeater brane.

One of the larger spheres answered him officiously. 'Of course. Who *else* might you have been? We trust the quickening has been performed to your general satisfaction?'

He picked at a patch of damp fur, suppressing the urge to shiver. 'Everything seems in order. Perhaps if we moved to a warmer room...' His voice sounded normal enough, despite the alterations to his face: maybe a touch less deep than normal, with the merest suggestion of feline snarl in the vowels.

'Naturally. Doctor Austvro has been waiting for you.'

'I'm surprised she wasn't here to greet me.'

'Doctor Austvro is a busy woman, Inspector; now more than ever. I thought someone from the Office of Scrutiny would have appreciated that.'

He was about to mention something about common courtesies, then thought better of it: even if she wasn't listening in, there was no telling what the aerial might report back to Austvro.

'Perhaps we'd better be moving on. I take it Doctor Austvro can find time to squeeze me into her schedule, now that I'm alive?'

'Of course,' the machine said sniffily. 'It's some distance to her laboratory. It might be best if I carried you, unless you would rather locomote.'

Fernando knew the drill. He spread his arms, allowing the cluster of flying spheres to distribute itself around his body to provide support. Small spheres pushed under his arms, his buttocks, the padded black soles of his feet, while others nudged gently against chest and spine to keep him balanced. The largest sphere, which played no role in supporting him, flew slightly ahead. It appeared to generate some kind of aerodynamic air pocket. They sped through the open door and down a long, curving corridor, gaining speed with each second. Soon they

were moving hair-raisingly fast, dodging round hairpin bends and through doors that opened and shut only just in time.

Fernando remembered his tail and curled it out of harm's way.

'How long will this take?' he asked.

'Five minutes. We shall only be journeying a short distance into the inclusion.'

Fernando recalled his briefing. 'What we're passing through now: this is all human-built, part of Pegasus Station? We're not seeing any KR-L artefacts yet?'

'Nor shall you,' the aerial said sternly. 'The actual business of investigating the KR-L machinery falls under the remit of the Office of Exploitation, as you well know. Scrutiny's business is confined only to peripheral matters of security related to that investigation.'

Fernando bristled. 'And as such…'

'The word was "peripheral", Inspector. Doctor Austvro was very clear about the terms under which she would permit your arrival, and they did not include a guided tour of the KR-L artefacts.'

'Perhaps if I ask nicely.'

'Ask whatever you like. It will make no difference.'

While they sped on—in silence now, for Fernando had decided he preferred it that way—he chewed over what he knew of the inclusion, and its significance to the Metagovernment.

Hundreds of thousands of years ago, humanity had achieved the means to colonise nearby branes: squeezing biological information across the hyperspatial gap into adjacent realities, then growing living organisms from those patterns. Now the Metagovernment sprawled across thirty thousand dense-packed braneworlds. Yet in all that time it had only encountered evidence of one other intelligent civilisation: the vanished KR-L culture.

Further expansion was unlikely. Physics changed subtly from brane to brane, limiting the possibilities for human colonisation. Beyond fifteen thousand realities in either direction, people could only survive inside bubbles of tampered

spacetime, in which the local physics had been tweaked to simulate homebrane conditions. These 'inclusions' became increasingly difficult to maintain as the local physics grew more exotic. At five kilometres across, Meranda Austvro's inclusion was the smallest in existence, and it still required enormous and expensive support machinery to hold it open. The Metagovernment was happy to shoulder the burden because it hoped to reap riches from Austvro's investigations into the vanished KR-L culture.

But that investigation was supposed to be above-top-secret: the mere existence of the KR-L culture officially deniable at all levels of the Metagovernment. By all accounts Austvro was close to a shattering discovery.

And yet there were leaks. Someone close to the operation—maybe even Austvro herself—was blabbing.

Scrutiny had sent Fernando in to seal the leak. If that meant shutting down Austvro's whole show until the cat could be put back into the bag (Fernando could not help but smile at the metaphor.), then he had the necessary authorisation.

How Austvro would take it was another thing.

The rush of corridors and doors slowed abruptly, and a moment later Fernando was deposited back on his feet, teetering slightly until he regained his balance. He had arrived in a much larger room than the one where he had been quickened, one that felt a good deal more welcoming. There was plush white carpet on the floor, comfortable furniture, soothing pastel décor, various homely knickknacks and tasteful *objets d'art*. The rock-effect walls were interrupted by lavish picture windows overlooking an unlikely garden, complete with winding paths, rock pools and all manner of imported vegetation, laid out under a soothing green sky. It was a convincing simulacrum of one of the more popular holiday destinations in the low-thousand branes: Prospero, perhaps, or even Sycorax.

Meranda Austvro, who was reclining in a silver dress on a long black settee next to a coffee table, beckoned him to join her. 'Welcome to Pegasus Station, Inspector. I'm sorry I wasn't able to greet you sooner.'

Fernando nodded politely, settling himself down on the other side of the table. 'Your aerial told me you'd been busy.'

'That's part of it. But I must admit we botched your first quickening, and I didn't have time to wait around to see the results a second time.'

'When you say "botched"…'

'I neglected to check your header tag more carefully. When all that cat fur started appearing…' She waved her hand dismissively. 'I assumed there'd been a mistake in the profile, so I aborted the quickening, before you reached sentience.'

The news unnerved him, but failed quickenings weren't unknown. 'I hope you recycled my remains.'

'On the contrary, Inspector: I made good use of them.' Austvro patted a striped orange rug, spread across the length of the settee. 'You don't mind, do you? It's just that I found the pattern quite appealing.'

'Make the most of me,' Fernando said, trying not to sound as if she had touched any particular nerve. 'You can have another skin when I leave, if it means so much to you.'

She clicked her fingers over his shoulder, at the aerial. 'You may go now, Caliph.'

The spheres bustled around each other. 'As you wish, Doctor Austvro.'

When Fernando had heard the whisk of the closing door, he leaned an elbow on the table, bringing his huge whiskered head closer to Austvro's. She was an attractive woman, despite a certain steely hauteur. He wondered if she could smell his breath, and if so how uniquely, distastefully feline it was. 'I hope this won't take too much time, for both our sakes. Scrutiny wants early closure on this whole mess.'

'I'm sure it does. Unfortunately, I don't know the first thing about your investigation. Therefore I'm not sure how I can help you.'

'You were informed that we were investigating a security hole.'

'I was informed, and I found the suggestion absurd. Unless I am the perpetrator.' She turned her cool, civil eyes upon him.

'Is that what you think, Inspector? That I am the one leaking information back to the homebrane, risking the suspension of my own project?'

'I know only that there are leaks.'

'They could be originating from someone in Scrutiny, or Exploitation. Have you considered that?'

'We have to start somewhere. The operation itself seems as good a place as any.'

'Then you're wasting your time. Return down-stack and knock on someone else's door. I've work to do.'

'Why are you so certain the leaks couldn't be originating here?'

'Because—firstly—I do not accept that there *are* leaks. There are merely statistical patterns, coincidences, which Scrutiny has latched onto because it has nothing better to do with its time. Secondly, I run this show on my own. There is no room for anyone else to be the source of these non-existent leaks.'

'Your husband?'

She smiled briefly and extended a hand over the coffee table, palm down. A figure—a grave, clerical-looking man in black—appeared above the table's surface, no larger than a statuette. The man made a gesture with his hands, as if shaping an invisible ball, then said something barely audible—Fernando caught the phrase 'three hundred'—then vanished again.

'My husband died years ago, Inspector. Edvardo and I were deep inside the KR-L machinery, protected by an extension of the inclusion. My husband's speciality was acausal mechanics...' For a moment, a flicker of humanity interrupted the composure of her face. 'The extension collapsed. Edvardo was on the other side of the failure point. I watched him fall into KR-L spacetime. I watched what it did to him.'

'I'm sorry,' Fernando said, wishing he had paid more attention to the biographical briefing.

'Since then I have conducted operations alone, with only the machines to help me. Caliph is the most special of them: I place great value on his companionship. You can question the machines if you like, but it won't get you anywhere.'

'Yet the leaks are real.'

'We could argue about that.'

'Scrutiny wouldn't have sent me otherwise.'

'Let me get this straight,' Austvro said. 'Scrutiny keeps tabs on the entire information content of the human species, across all thirty thousand colonised reality layers? Every byte, no matter where it's recorded, no matter how often it's updated? It sifts that almost incomprehensibly vast sea of data, looking for the tiniest glint of gold that might just signify a security breakdown?'

'No one said it was child's play.'

'There must be false alarms. Given that much data, isn't any pattern almost guaranteed to show up eventually?'

'It is,' Fernando conceded, stroking his chin tufts. 'But that's why Scrutiny pays attention to context, and to clustering. Not simply to exact matches for sensitive keywords, either, but for suspicious similarities: near-misses designed to throw us off the scent. Miranda for Meranda; Ostrow for Austvro, that kind of thing.'

'And you've found these clusters?'

'Nearly a dozen, at the last count. Someone with intimate knowledge of this research project is talking, and we can't have that.'

This amused her. 'So the Metagovernment does have its enemies after all.'

'It's no secret that there are political difficulties in the high branes. Talk of secession. Exploitation feels that the KR-L technology may give the Metagovernment just the tools it needs to hold the stack together, if the dissidents try to gain the upper hand.'

'Tools of political control,' Austvro sneered.

'An edge, that's all. And obviously matters won't be helped if the breakaway branes learn about the KR-L discoveries, and what we intend to do with them. That's why we need to keep a lid on things.'

'But these clusters…' Austvro leaned back into the settee, studying Fernando levelly. 'I was shown some of the evidence

before you arrived, and, frankly, it didn't make much sense to me.'

'It didn't?'

'If someone—some mole—was trying to get a message through to the breakaway branes, why be so cryptic? Why not just come out and say it, instead of creating jumbled riddles? Some of these keywords even looked like they were embedded in some kind of play.'

'All I can say is that Scrutiny considered the evidence sufficiently compelling to require immediate action. It's still investigating the provenance of these documents, but I should have word on that soon enough.'

Austvro narrowed her flint-grey eyes. 'Provenance?'

'As I said, the documents are faked: made to appear historical, as if they've always been present in the data.'

'Which is even more absurd than there being leaks in the first place.'

He smiled at her. 'I'm glad we agree on something.'

'It's a start.'

He tapped his extended claws against the coffee table. 'I appreciate your scepticism, Doctor. But the fact is I can't leave here until I have an explanation. If Scrutiny isn't satisfied with my findings—if the source of the leaks can't be traced—they'll have no option but to shut down Pegasus, or at least replace the current set-up with something under much tighter government control. So it's really in your interests to work with me, to help me find the solution.'

'I see,' she said coldly.

'I'd like to see more of this operation. Not just Pegasus Station, but the KR-L culture itself.'

'Unthinkable. Didn't Caliph clarify where your jurisdiction ends, Inspector?'

'It's not a question of jurisdiction. Give me a reason to think you haven't anything to hide, and I'll focus my enquiries somewhere else.'

She looked down, fingering the striped orange rug she had made of his skin.

'It will serve no purpose, Inspector, except to disturb you.'

'I'll edit the memories before I pass them back down the stack. How does that sound?'

She rose from the settee. 'Your call. But don't blame me when you start gibbering.'

Austvro led him from the lounge, back into a more austere part of the station. The hem of her silver dress swished on the iron-grey flooring. Now and then an aerial flashed past on some errand, but in all other respects the station was deserted. Fernando knew that Exploitation had offered to send more expertise, but Austvro had always declined assistance. By all accounts she worked efficiently, feeding a steady stream of titbits and breakthroughs back to the Metagovernment specialists. According to Fernando's dossier, Austvro didn't trust the stability of anyone who would actually volunteer to be copied this far up-stack, knowing the protocols. It was no surprise that she treated him with suspicion, for he was also a volunteer, and only his memories would be going back home again.

Presently they arrived at an oval aperture cut into one wall. On the other side of the aperture, ready to dart down a tunnel, was a two-seater travel pod.

'Are you sure about this, Inspector?'

'I'm perfectly sure.'

She shrugged—letting him know it was his mistake, not hers—and then ushered him into one of the seats. Austvro took the other one, facing him at right angles to the direction of travel. She applied her hand to a tiller and the pod sped into motion. Tunnel walls zipped by in an accelerating blur.

'We're about to leave the main body of the inclusion,' Austvro informed him.

'Into KR-L spacetime?'

'Not unless the support machines fail. The inclusion's more or less spherical—insofar as one can talk about "spherical" intrusions of one form of spacetime into another—but it sprouts tentacles and loops into interesting portions of the surrounding KR-L structure. Maintaining these tentacles and

loops is much harder than keeping the sphere up, and I'm sure you've heard how expensive and difficult *that* is.'

Fernando felt his hairs bristling. The pod was moving terrifically fast now; so swiftly that there could be no doubt that they had left the main sphere behind already. He visualised a narrow, delicate stalk of spacetime jutting out from the sphere, and him as a tiny mote within that stalk.

'Was this where your husband died, Doctor?'

'A similar extension; it doesn't matter now. We've made some adjustments to the support machinery, so it shouldn't happen again.' Her expression turned playful. 'Why? You're not *nervous*, are you?'

'Not at all. I just wondered where the accident had happened.'

'A place much like here. It doesn't matter. My husband never much cared for these little jaunts, anyway. He much preferred to restrict himself to the main inclusion.'

Fernando recalled the image of Austvro's husband, his hands cupping an imaginary ball, like a mime, and something of the gesture tickled his interest.

'Your husband's line of work: acausal signalling, wasn't it: the theoretical possibility of communication through time, using KR-L principles?'

'A dead-end, unfortunately. Even the KR-L had never made *that* work. But the Metagovernment was happy with the crumbs and morsels he sent back home.'

'He must have thought there was something in it.'

'My husband was a dreamer,' Austvro said. 'His singular failing was his inability to distinguish between a practical possibility and an outlandish fantasy.'

'I see.'

'I don't mean to sound harsh. I loved him, of course. But he could never love the KR-L the way I do. For him these trips were always something to be endured, not relished.'

He watched her eyes for a glimmer of a reaction. 'And after his accident—did you have misgivings?'

'For a nanosecond. Until I realised how important this work is. How we must succeed, for the sake of the homebrane.' She leaned forward in her seat and pointed down the tunnel. 'There. We're approaching the interface. That's where the tunnel cladding becomes transparent. The photons reaching your eyes will have originated as photon-analogues in KR-L spacetime. You'll see their structures, their great engines. The scale will astound you. The mere geometry of these artefacts is ... deeply troubling, for some. If it disconcerts you, close your eyes.' Her hand remained hard on the tiller. 'I'm used to it, but I'm exposed to these marvels on a daily basis.'

'I'm curious,' Fernando said. 'When you speak of the aliens, you sometimes sound like you're saying three letters. At other times...'

'Krull, yes,' she said, dismissively. 'It's shorthand, Inspector, nothing more. 'Long before we knew it had ever been inhabited, we called this the KR-L brane. K and R are the Boltzmann and Rydberg constants, from nuclear physics. In KR-L spacetime, these numbers differ from their values in the homebrane. L is a parameter that denotes the degree of variation.'

'Then Krull is ... a word of your own coining?'

'If you insist upon calling it a word. Why? Has it appeared in these mysterious keyword clusters of yours?'

'Something like it.'

The pod swooped into the transparent part of the stalk. It was difficult to judge speed now. Fernando assumed there was some glass-like cladding between him and the inclusion boundary, and somewhere beyond that (he was fuzzy on the physics) the properties of spacetime took on alien attributes, profoundly incompatible with human biochemistry. But things could still live in that spacetime, provided they'd been born there in the first place. The KR-L had evolved into an entire supercivilisation, and although they were gone now, their great machines remained. He could see them now, as huge and bewildering as Austvro had warned. They were slab-sided, round-edged, ribbed with flanges and cooling grids, surmounted by arcing spheres and flickering discharge cones. The structures glowed with a

lilac radiance that seemed to shade into ultraviolet. They receded in all directions—more directions, in fact, than seemed reasonable, given the usual rules of perspective. Somewhere low in his throat he already felt the first queasy constriction of nausea.

'To give you an idea of scale…' Austvro said, directing his unwilling attention towards one dizzying feature, '…that structure there, if it were mapped into our spacetime, and built from our iron atoms, would be larger than a Jupiter-class gas giant. And yet it is no more than a heat dissipation element, a safety valve on a much larger mechanism. That machine is more than three light-hours across, and it too is only one element in a larger whole.'

Fernando fought to keep his eyes open. 'How far do these machines extend?'

'At least as far as our instruments can reach. Hundreds of light-hours in all directions. The inclusion penetrates a complex of KR-L machinery larger than one of our solar systems. And yet even then there is no suggestion that the machinery ends. It may extend for weeks, months, of light-travel time. It may be larger than a galaxy.'

'Its function?' Seeing her hesitation, he added: 'I have the necessary clearance, Doctor. It's safe to tell me.'

'Absolute control,' she said. 'Utter dominance of matter and energy, not just in this brane, but across the entire stack of realities. With this instrumentality, the KR-L could influence events in any brane they selected, in an instant. This machinery makes our graviton pulse equipment—the means by which you arrived here—look like the workings of a brain-damaged caveman.'

Fernando was silent for a moment, as the pod sped on through the mind-wrenching scenery.

'Yet the KR-L only ever occupied this one brane,' he said. 'What use did they have for machinery capable of influencing events in another one?'

'Only the KR-L can tell us that,' Austvro said. 'Yet it seems likely to me that the machinery was constructed to deal with a threat to their peaceful occupation of this one brane.'

'What could threaten such a culture, apart from their own bloody-minded hubris?'

'One must presume: another culture of comparable sophistication. Their science must have detected the emergence of another civilisation, in some remote brane, hundreds of thousands or even millions of realities away, that the KR-L considered hostile. They created this great machinery so that they might nip that threat in the bud, before it spilled across the stack towards them.'

'Genocide.'

'Not necessarily. Is it evil to spay a cat?'

'Depends on the cat.'

'My point is that the KR-L were not butchers. They sought their own self-preservation, but not at the ultimate expense of that other culture, whoever *they* might have been. Surgical intervention was all that was required.'

Fernando looked around again. Some part of his mind was finally adjusting to the humbling dimensions of the machinery, for his nausea was abating. 'Yet they're all gone now. What happened?'

'Again, one must presume: some fatal hesitancy. They created this machinery, but, at what should have been their moment of greatest triumph, flinched from using it.'

'Or they did use it, and it came back and bit them.'

'I hardly think so, Inspector.'

'How many realities have we explored? Eighty, ninety thousand layers in either direction?'

'Something like that,' she said, tolerantly.

'How do we know what happens when you get much further out? For that matter, what could the KR-L have known?'

'I'm not sure I follow you.'

'I'm just wondering ... when I was a child I remember someone—I think it was my uncle—explaining to me that the stack was like the pages of an infinitely thick book, a book whose pages reached away to an infinite distance in either direction, reality after reality, as far as you could imagine, with the physics changing only slightly from page to page.'

'As good an explanation as the layman will ever grasp.'

'But the same person told me there was another theory of the stack, taken a bit less seriously, but not completely discredited.'

'Continue,' Austvro said.

'The theory was that physics kept changing, but after a while it flattened out again and began to converge back to ours. And that by then you were actually coming back again, approaching our reality from the other direction. The stack, in other words, was circular.'

'You're quite right: that theory is taken a bit less seriously.'

'But it isn't discredited, is it?'

'You can't discredit an untestable hypothesis.'

'But what if it is testable? What if the physics does begin to change less quickly?'

'Local gradients tell you nothing. We'd have to map millions, tens of millions of layers, before we could begin…'

'But you already said the KR-L machinery might have had that kind of range. What if they were capable of looking all the way around the stack, but they didn't realise it? What if the hostile culture they thought they were detecting was actually themselves? What if they turned on their machinery and it reached around through the closed loop of realities and nipped *them* in the bud?'

'An amusing conceit, Inspector, but no more than that.'

'But a deadly one, should it happen to be true.' Fernando stroked his chin tufts, purring quietly to himself as he thought things through. 'The Office of Exploitation wishes to make use of the KR-L machinery to deal with another emerging threat.'

'The Metagovernment pays my wages. It's up to *it* what it does with the results I send home.'

'But as was made clear to me when I arrived, you are a busy woman. Busy because you are approaching your own moment of greatest triumph. You understand enough about the KR-L machinery to make it work, don't you. You can talk to it through the inclusion, ask it do your bidding.'

Her expression gave nothing away. 'The Metagovernment expects results.'

'I don't doubt it. But I wonder if the Metagovernment has been fully appraised of the risks. When they asked you what happened to the KR-L, did you mention the possibility that they might have brought about their own extinction?'

'I confined my speculation to the realm of the reasonably likely, Inspector. I saw no reason to digress into fancy.'

'Nonetheless, it might have been worth mentioning.'

'I disagree. The Metagovernment is intending to take action against dissident branes within its own realm of colonisation, not some barely-detected culture a million layers away. Even if the topology of the layers *was* closed…'

'But even if the machinery was used, it was only used once,' Fernando said. 'There's no telling what other side-effects might be involved.'

'I've made many local tests. There's no reason to expect any difficulties.'

'I'm sure the KR-L scientists were equally confident, before they switched it on.'

Her tone of voice, never exactly confiding, turned chill. 'I'll remind you once again that you are on Scrutiny business, not working for Exploitation. My recollection is that you came to investigate leaks, not to question the basis of the entire project.'

'I know, and you're quite right. But I can't help wondering whether the two things aren't in some way connected.'

'I don't even accept that there are leaks, Inspector. You have some way to go before you can convince me they have anything to do with the KR-L machinery.'

'I'm working on it,' Fernando said.

They watched the great structures shift angle and perspective as the pod reached the apex of its journey and began to race back towards the inclusion. Fernando was glad when the shaft walls turned opaque and they were again speeding down a dark-walled tunnel, back into what he now thought of as the comparable safety and sanity of Pegasus Station. Until he had recorded and transmitted his memories down the stack, self-preservation still had a strong allure.

'I hope that satisfied your curiosity,' Austvro said, when they had disembarked and returned to her lounge. 'But as I warned you, the journey was of no value to your investigation.'

'On the contrary,' he told her. 'It clarified a number of things. Might I have access to a communications console? I'd like to see if Scrutiny have come up with anything new since I arrived.'

'I'll have Caliph provide you with whatever you need. In the meantime I must attend to work, as I'm sure you understand. Have Caliph summon me if there is anything of particular urgency.'

'I'll be sure to.'

She left him alone in the lounge. He fingered the tiger skin rug, repulsed and fascinated in equal measure at the exact match with his own fur. While he waited for the aerial to arrive, he swept a paw over the coffee table, trying to conjure up the image of Austvro's dead husband. But the little figure never appeared.

It hardly mattered. His forensic memory was perfectly capable of replaying a recent observation, especially one that had seemed noteworthy at the time. He called to mind the dead man, dwelling on the way he shaped an invisible form: not, Fernando now realised, a ball, but the ring-shaped stack of adjacent branes in the closed-loop of realities. 'Three hundred and sixty degrees,' he'd been saying. Meranda Austvro's dead husband had been describing the same theoretical meta-reality of which Fernando's uncle had once spoken. Did that mean that the dead man believed that the KR-L had been scared by their own shadow, glimpsed at some immense distance into the reality stack? And had they forged this soul-crushingly huge machinery simply to strike at that perceived enemy, not realising that the blow was doomed to fall on their own heads?

Perhaps.

Fernando was just thinking that through when Caliph appeared, assigning one of his larger spheres into a communications console. Symbols and keypads brightened across the matte grey surface. Fernando tapped commands, claws clicking as he worked, and soon accessed his private data channel.

There was, as he had half expected, a new message from Scrutiny. It concerned the more detailed analysis of the leaks that had been in motion when he left on his investigation.

Fernando placed a direct call through.

'Hello,' said Fernando's down-brane counterpart, a man named Cook. 'Good news, bad news, I'm afraid.'

'Continue,' Fernando purred.

'We've run a thorough analysis on the keyword clusters, as promised. The good news is that the clusters haven't gone away: their statistical significance is now even more certain. There's clearly been a leak. That means your journey hasn't been for nothing.'

'That's a relief.'

'The bad news is that the context is still giving us some serious headaches. Frankly, it's disturbing. Whoever's responsible for these leaks has gone to immense trouble to make them look as if they've always been part of our data heritage.'

'I don't understand. I mean, I *understand*, but I don't get it. There must be a problem with your methods, your data auditing.'

Cook looked pained. 'That's what we thought, but we've been over this time and again. There's no mistake. Whoever planted these leaks has tampered with the data at a very deep level; sufficient to make it seem as if the clusters have been with us long before the KR-L brane was ever discovered.'

Fernando lowered his voice. 'Give me an example. Austvro mentioned a play, for instance.'

'That would be one of the oldest clusters. *The Shipwreck*, by one Wilhelm Shaxpia, 001611. No overt references to the KR-L, but it does deal with a scholar on a haunted island, which could be considered a metaphorical substitute for Austvro and Pegasus Station. Contains a Miranda, too, and...'

'Shaxpia was the alleged playwright?'

'The play in which the cluster was embedded appears to be just one of several dozen that he supposedly wrote.'

'All of which are presumably no more authentic than *The Shipwreck*?'

'Obviously no one man could have been that prolific. Our mole screwed up in other ways, too: the plays are riddled with anachronisms; words and phrases that don't appear earlier in the records.'

'Sloppy,' Fernando said, shaking his great whiskered head. 'Tell me about another cluster.'

'Here's the next. Skip forward three and half centuries to 001957 and we have another piece of faked drama: some kind of recorded performance. Again, lots of giveaways: Ostrow for Austvro, Bellerophon—he's the guy who rode Pegasus—the KR-L themselves … real aliens, this time, even if they're confined to a single planet, rather than an entire brane. There's even—get this—a tiger.'

'Really,' Fernando said dryly.

'But here's an oddity: our enquiries turned up peripheral matter which seems to argue that the later piece was in some way based upon the earlier one.'

'Almost as if the mole wished to lead our attention from one cluster to another.' Fernando scratched at his ear. 'What's the next cluster?'

'Jump to 002713: an ice opera performed on Pluto Prime, for one night only, before it closed due to exceptionally bad notices. Mentions "entities in the eighty three thousandth layer of reality". This from at least six thousand years before the existence of adjoining braneworlds was proven beyond doubt.'

'Could be coincidence, but … well, go on.'

'Jump to 009655, the premier of a Tauri-phase astrosculpture in the Wenlock star forming region. Supplementary text refers to "the aesthetic of the doomed Crail" and "Mirandine and Kalebin".'

'There are other clusters, right up to the near-present?'

'All the way up the line. Random time-spacing: we've looked for patterns there, and haven't found any. It must mean something to the mole, of course…'

'If there is a mole,' Fernando said.

'Of course there's a mole. What other explanation could there be?'

'That's what I'm wondering.'

Fernando closed the connection, then sat in silent contemplation, shuffling mental permutations. When he felt that he had examined the matter from every conceivable angle—and yet still arrived at the same unsettling conclusion—he had Caliph summon Doctor Austvro once more.

'Really, Inspector,' she said, as she came back into the lounge. 'I've barely had time...'

'Sit down, Doctor.'

Something in the force of his words must have reached her. Doctor Austvro sank into the settee, her hands tucked into the silvery folds of her dress.

'Is there a problem? I specifically asked...'

'You're under arrest for the murder of your husband, Edvardo Austvro.'

Her face turned furious. 'Don't be absurd. My husband's death was an accident: a horrid, gruesome mistake, but no more than that.'

'That's what you wished us to think. But you killed him, didn't you? You arranged for the collapse of the inclusion, knowing that he would be caught in KR-L spacetime.'

'Ridiculous...'

'Your husband understood what had happened to the KR-L, how their machinery had reached around the stack, through three hundred and sixty degrees, and wiped them out of existence, leaving only their remains. He knew exactly how dangerous it would be to reactivate the machinery; how it could never become a tool for the Metagovernment. You said it yourself, Meranda: he feared the machinery. That's because he knew what it had done; what it was still capable of doing.'

'I would never have killed him,' she said, her tone flatly insistent.

'Not until he opposed you directly, not until he became the only obstacle between you and your greatest triumph. Then he had to go.'

'I've heard enough.' She turned her angry face towards the aerial. 'Caliph, escort the Inspector to the dissolution chamber.

He's in clear violation of the terms under which I agreed to this investigation.'

'On the contrary,' Fernando said. 'My enquiry is still of central importance.'

She sneered. 'Your ridiculous obsession with leaks? I monitored your recent conversation with the homebrane, Inspector. The leaks are what I've always maintained: statistical noise, meaningless coincidences. The mere fact that they appear in sources that are incontrovertibly old … what further evidence do you need, that the leaks are nothing of the sort?'

'You're right,' Fernando said, allowing himself a heavy sigh. 'They aren't leaks. In that sense I was mistaken.'

'In which case admit that your mission here was no more than a wild goose chase, and that your accusations concerning my husband amount to no more than a desperate attempt to salvage some…'

'They aren't leaks,' Fernando continued, as if Austvro had not spoken. 'They're warnings, sent from our own future.'

She blinked. 'I'm sorry?'

'It's the only explanation. The leaks appear in context sources that appear totally authentic … because they are.'

'Madness.'

'I don't think so. It all fits together quite nicely. Your husband was investigating acausal signalling: the means to send messages back in time. You dismissed his work, but what if there was something in it after all? What if a proper understanding of the KR-L technology allowed a future version of the Metagovernment to send a warning to itself in the past?'

'What kind of warning, Inspector?' she asked, still sounding appalled.

'I'm guessing here, but it might have something to do with the machinery itself. You're about to reactivate the very tools that destroyed the KR-L. Perhaps the point of the warning is to stop that ever happening. Some dreadful, unforeseen consequence of turning the machinery against the dissident branes … not the extinction of humanity, obviously, or there wouldn't be anyone left alive to send the warning. But something nearly

as bad. Something so awful that it must be edited out of history, at all costs.'

'You should listen to yourself, Inspector. Then ask yourself whether you came out of the quickening room with all your faculties intact.'

He smiled. 'Then you have doubts.'

'Concerning your sanity, yes. This idea of a message being sent back in time … it might have some microscopic degree of credibility if your precious leaks weren't so hopelessly cryptic. Who sends a message and then scrambles the facts?'

'Someone in a hurry, I suppose. Or someone with an imperfect technique.'

'I'm sure that means something to you.'

'I'm just wondering: what if there wasn't time to get it right? What if the sending of the message was a one-shot attempt, something that had to be attempted even though the method was still not fully understood?'

'That still doesn't explain why the keywords would crop up in … a *play*, of all things.'

'Perhaps it does, though. Especially if the acausal signalling involves the transmission of patterns directly into the human mind, across time, in a scattergun fashion. The playwright…'

'Shaxpia,' she said, reminding him of how she had listened in on Scrutiny business.

'He lived and died before the discovery of quantum mechanics, let alone braneworlds. Even if the warning arrived fully-formed and coherent in his mind, he could only have interpreted it according to his existing mental framework. It's no wonder things got mixed up, confused. His conceptual vocabulary didn't extend to vanished alien cultures in adjacent reality stacks. It did extend to islands, dead witches, ghosts.'

'Ridiculous. Next you'll be telling me that the other clusters…'

'Exactly so. The dramatised recording—the "film"—was made a few centuries later. The creators did the best they could with their limited understanding of the universe. They knew of space travel, other worlds. Closer to the truth than Shaxpia,

but still limited by the mental prison of their contemporary worldview. The same goes for all the other clusters, I'm willing to bet.'

'Let me get this straight,' Austvro said. 'The future Metagovernment resurrects ancient KR-L time-signalling machinery, technology that it barely understands. It attempts to send a message back in time, but it ends up spraying it through history, back to the time of a man who probably thought the Sun ran on coal.'

'Maybe even earlier,' Fernando said. 'There's nothing to say there aren't other clusters, still lurking in the statistical noise...'

Austvro cut him off. 'And yet despite this limited understanding of the machinery, the—as you said—scattershot approach—they still managed to score direct hits into the heads of playwrights, dramatists, sculptors...' She shook her head pityingly.

'Not necessarily,' Fernando said. 'We only know that these people became what they were in our timeline. It might have been the warning itself that set these individuals on their artistic courses ... planting a seed, a vaguely-felt anxiety, that they had no choice but to exorcise through creative expression, be it a play, a film, or an ice-opera on Pluto Prime.'

'I'll give you credit, Inspector, you really know how to take an argument beyond its logical limit. You're actually suggesting that if the signalling hadn't taken place, none of these works of art would ever have existed?'

He shrugged. 'If you admit the possibility of time messages...'

'I don't. Not at all.'

'It doesn't matter. I'd hoped to convince you—I thought it might make your arrest an easier matter for both of us—but it's not necessary. You understand now, though, why I must put an end to your research. Scrutiny and Exploitation can decide for themselves whether there's any truth in my theory.'

'And if they don't think there is—then I'll be allowed to resume my studies?'

'There's still the small matter of your murder charge, Meranda.'

She looked sad. 'I'd hoped you might have forgotten.'

In a flash her hand had emerged from the silvery folds of her dress, clutching the sleek black form of a weapon. Fernando recognised it as a simple blaster. It might not have been the most sophisticated weapon in existence, but it was more than capable of inflicting mortal harm.

'Please, Doctor. Put that thing away, before you do one of us an injury.'

She stood, the weapon wavering in her hand, but never losing its lock on him.

'Caliph,' she said. 'Escort the Inspector to the dissolution chamber. He's leaving us.'

'You're making a mistake, Meranda.'

'The mistake would be in allowing the Metagovernment to close me down, when I'm so close to success. Caliph!'

'I cannot escort the Inspector, unless the Inspector wishes to be escorted,' the aerial informed her.

'I gave you an order!'

'He is an agent of the Office of Scrutiny. My programming does not permit...'

'Walk with me, please,' Fernando said. 'Put the gun away and we'll say no more about it. You're in enough trouble as it is.'

'I'm not going with you.'

'You'll receive a fair trial. With the right argument, you may even be able to claim your husband's death as manslaughter. Perhaps you didn't mean to kill him, just to strand him...'

'It's not the trial,' she snarled. 'It's the thought of stepping into that *thing* ... I won't go with you.'

'You must.'

He took a step towards her, knowing even as he did it that the move was unwise. He watched her finger tense on the blaster's trigger, and for an instant he thought he might cross the space to her before the weapon discharged. Few people had the nerve to hold a gun against an agent of Scrutiny; even fewer had the nerve to fire.

But Meranda Austvro was one of those few. The muzzle spat rapid bolts of self-confined plasma, and he watched in slow-motion horror as three of the bolts slammed into his right arm, below the elbow, and took his hand and forearm away in an agonising orange fire, like a chalk drawing smeared in the rain. The pain hit him like a hammer, and despite his training he felt the full force of it before mental barriers slammed down in rapid succession, blocking the worst. He could smell his own charred fur.

'An error, Doctor Austvro,' he grunted, forcing the words out.

'Don't take another step, Inspector.'

'I must.'

'I'll kill you.' The weapon was now aimed directly at his chest. If her earlier shot had been wide, there would be no mistakes now.

He took another step. He watched her finger tense again, and readied himself for the annihilating fire.

But the weapon dropped from her hand. One of Caliph's smaller spheres had dashed it from her grip. Austvro clutched her hand with the other, massaging the fingers. Her face showed stunned incomprehension. 'You betrayed me,' she said to the aerial.

'You injured an agent of Scrutiny. You were about to inflict further harm. I could not allow that to happen.' Then one of the larger spheres swerved into Fernando's line of sight. 'Do you require medical assistance?'

'I don't think so. I'm about done with this body anyway.'

'Very well.'

'Will you help me to escort Doctor Austvro to the dissolution chamber?'

'If you order it.'

'Help me, in that case.'

Doctor Austvro tried to resist, but between them Fernando and Caliph quickly had the better of her. Fernando kicked the weapon out of harm's way, then pulled Austvro against his chest with his left arm, pinning her there. She struggled to escape,

but her strength was nothing against his, even allowing for the shock of losing his right arm.

Caliph propelled them to the dissolution chamber. Austvro fought all the way, but with steadily draining will. Only at the last moment, when she saw the grey hood of the memory recorder, next to the recessed alcove of the dissolution field, did she summon some last reserve of resistance. But her efforts counted for nothing. Fernando and the robot placed her into the recorder, closing the heavy metal restraining buckles across her body. The hood lowered itself, ready to capture a final neural image; a snapshot of her mind that would be encoded into a graviton pulse and relayed back to the homebrane.

'Meranda Austvro,' Fernando said, pushing the blackened stump of his arm into his chest furs, 'I am arresting you on the authority of the Office of Scrutiny. Your resurrection profile will be captured and transmitted into the safekeeping of the Metagovernment. A new body will be quickened and employed as a host for these patterns, and then brought to trial. Please compose your thoughts accordingly.'

'When they quicken me again, I'll destroy your career,' she told him.

Fernando looked sympathetic. 'You wouldn't believe how many times I've heard that before.'

'I should have skinned you twice.'

'It wouldn't have worked. They'd have sent a third copy of me.'

He activated the memory recorder. Amber lights flickered across the hood, stabilising to indicate that the device had obtained a coherent image and that the relevant data was ready to be committed to the graviton pulse. Fernando issued the command.

'Your patterns are on their way home now, Meranda. For the moment you still have a legal existence. Enjoy it while you can.'

He'd never said anything that cruel before, and almost as soon as the words were out he regretted them. Taunting the soon-to-be-destroyed had never been his style, and it shamed

him that he had permitted himself such a gross lapse of professionalism. The only compensation was that he would soon find himself in the same predicament as Doctor Austvro.

A green light appeared on the recorder. It signified that the homebrane had received the graviton pulse, and that the resurrection profile had been transmitted without error.

'Former body of Meranda Austvro,' he began, 'I must now inform you…'

'Just get it over with, you beast.'

Fernando and Caliph helped her from the recorder. Her body felt light in his hands, as if some essential part of it had been erased or extracted during the recording process. Legally, this was no longer Doctor Meranda Austvro: just the biological vehicle Austvro had used while resident in this brane. According to Metagovernment law, the vehicle must now be recycled.

Fernando turned on the pearly screen of the dissolution field. He tested it with a stylus, satisfied when he saw the instant actinic flash as the stylus was wrenched from existence. Dissolution was quick and efficient. In principle the atomic fires destroyed the central nervous system long before pain signals had a chance to reach it, let alone be experienced as pain.

Not that anyone ever *knew*, of course. By the time you went through the field, your memories had already been captured. Anything you experienced at the moment of destruction never made it into the profile.

'I can push you into the field,' he told Austvro. 'But by all accounts you'll find it quicker and easier if you run at it yourself.'

She didn't want it to happen that way. Caliph and Fernando had to help her through the field. It wasn't the nicest part of the job.

Afterwards, Fernando sat down to sharpen and clarify his thoughts. In a little while he too would be consumed by fire, only to be reborn in the homebrane. Scrutiny would be expecting a comprehensive report into the Pegasus affair, and it would not do to be woolly on the details. Experience had taught him that a little mental preparation now paid dividends in the long

run. The recording and quickening process always blurred matters a little, so the clearer one could be at the outset, the better.

When he was done with the recorder, when the green light had reported safe receipt of his neural patterns, he turned to Caliph. 'I no longer have legal jurisdiction here—or anywhere, for that matter, since the "me" speaking to you is not even legally entitled to call itself Adam Fernando. But I hope you won't consider it improper of me to offer some small thanks for your assistance.'

'Will someone come back to take over?' Caliph asked.

'Probably. But don't be surprised if they come to shut down Pegasus. I'll put in a good word for you, though. I mean, my legal self will.'

'Thank you,' the aerial said.

'Not at all.'

Fernando stood from the recorder, and—as was his usual habit—took a running jump at the dissolution field. It wasn't the most elegant of ends—the lack of an arm hindered his balance—but it was quick and efficient and the execution not without a certain dignity.

Caliph watched the tiger burn, the stripes seeming to linger in the air before fading away, then gathered its spheres into an agitated swarm, wondering what to do next.

Editor's Acknowledgments

First and foremost, I am happy to thank my husband, Timothy Szczesuil for his skill, hard work, and ever cheerful assistance. He typeset the entire book, and gave me good advice at every step.

I wish to extend my thanks to Al Reynolds for his efforts during a difficult period. I am grateful to John Picacio for his lush, beautiful artwork, and to Alice Lewis for her elegant cover design, and for her advice on myriad design issues. Our special thanks go to David Grubbs for his patience, expertise, and editorial advice. I am grateful to Mark Olson and NESFA Press Czar, Tony Lewis, for their technical advice. Finally, I must thank our dedicated and tireless proofreaders: David Grubbs, Irene Harrison, Tony Lewis, Mark Olson, Sharon Sbarsky, and Leslie Turek.

Ann A. Broomhead
December 2009

Colophon

The body text was set in Adobe Garamond Pro, and the titles and page headers were in Univers Ultra Condensed 59. The book was laid out in Adobe InDesign CS3. The book was printed and bound by Sheridan Books of Ann Arbor, Michigan, on acid-free paper. No extraterrestrials were harmed in the production of this book.

Select books from NESFA Press

Call Me Joe. V1 of the Short Fiction of Poul Anderson	$29
The Queen of Air and Darkness: V.2 of the Short Fiction of Poul Anderson	$29
War and Space by Lester del Rey	$29
Flights of Eagles by Lester del Rey.	$29
Works of Art by James Blish	$29
Magic Mirrors by John Bellairs	$25
His Share of Glory: The Complete Short SF of C. M. Kornbluth	$29
The Rediscovery of Man: The Complete Short SF of Cordwainer Smith	$25

The Zelazny Project (6-book set)

Threshold – V.1: The Collected Stories of Roger Zelazny	$29
Power & Light – V.2: The Collected Stories of Roger Zelazny.	$29
This Mortal Mountain – V.3: The Collected Stories of Roger Zelazny	$29
Last Exit to Babylon – V.4: The Collected Stories of Roger Zelazny	$29
Nine Black Doves – V.5: The Collected Stories of Roger Zelazny	$29
The Road to Amber – V.6: The Collected Stories of Roger Zelazny	$29

Details on these and many more books are online at: www.nesfa.org/press/ Books may be ordered online or by writing to:

NESFA Press; PO Box 809; Framingham, MA 01701

We accept checks (in US$), Visa, or MasterCard. Add $4 P&H for one book, $8 for an order of two to five books, $2 per book for orders of six or more. (For addresses outside the U.S., please add $12 each for one or two books, $36 for an order of three to five books, and $6 per book for six or more.) Please allow 3–4 weeks for delivery. (Overseas, allow 2 months or more.)

The New England Science Fiction Association

NESFA is an all-volunteer, non-profit organization of science fiction and fantasy fans. Besides publishing, our activities include running Boskone (New England's oldest SF convention) in February each year, producing a semi-monthly newsletter, holding discussion groups on topics related to the field, and hosting a variety of social events. If you are interested in learning more about us, we'd like to hear from you. Contact us at info@nesfa.org or at the address above. Visit our web site at www.nesfa.org.

Josette Sanchez-Reynolds

ALASTAIR REYNOLDS

was born in 1966 in Barry, South Wales, and was raised in Cornwall and Wales, where he became familiar with the Deep Navigation Colliery in Treharris. He studied physics and astronomy, earning his Ph.D. in Astronomy from St. Andrews. He began working for the European Space Agency in Noordwijk in the Netherlands in 1991. He had already begun writing; his first story, "Nunivak Snowflakes," was published in 1990. His first novel was *Revelation Space*, published in 2000. He married, and continued working for the ESA until 2004, when he began writing full time. He moved back to Wales in 2008. His nine novels, many in the Revelation Space universe, have been so successful that Gollancz has contracted with him to produce ten more novels over the next ten years.

JOHN PICACIO

was born and raised in San Antonio, Texas. He earned his degree in architecture in 1992. He became a published illustrator in 1996, and left architecture to become a full-time illustrator in 2001. He has won Chesley Awards, the World Fantasy Award, and the *Locus* Award. He has been a Hugo Award nominee annually and has been published multiple times in the *Spec* thologies.

Cover a 2006 John Picacio
Cover d lice N. S. Lewis

"Alastair Reynolds occupies the same frenzied imaginative space as Philip K. Dick or A.E. Van Vogt."

— M. JOHN HARRISON, *THE GUARDIAN*

"He has a genius for big-concept SF."

— *PUBLISHERS WEEKLY*

"He is taking the stuff of space opera and making it into something new … the most exciting space opera writer working today."

— *LOCUS*

"Great stuff. The potential for future stories set in this world leaves me wanting more."

— *SF SIGNAL*

ISBN 978-1-886778-90-0
92600 >
9 781886 778900

Price: $26 | ISBN 978-1-886778-90-0